2023
2033

LE SUEUR RIVER WATERSHED

Comprehensive Watershed Management Plan

April 2023

THANK YOU + ACKNOWLEDGMENTS

Le Sueur River Watershed One Watershed, One Plan Partners

Blue Earth County

Blue Earth Soil and Water Conservation District

Faribault County

Faribault Soil and Water Conservation District

Freeborn County

Freeborn Soil and Water Conservation District

Waseca County

Waseca Soil and Water Conservation District

State Agencies

Minnesota Board of Water and Soil Resources

Minnesota Department of Agriculture

Minnesota Department of Health

Minnesota Department of Natural Resources

Minnesota Pollution Control Agency

Minnesota Environmental Quality Board

Federal Agencies

Natural Resources Conservation Service

Community and Citizen Representatives

Water Resources Center, Minnesota State University-Mankato

Le Sueur River Watershed Network

Consultants

ISG

Freshwater

Clean Water, Land & Legacy Amendment

Funding for this project was provided by the Clean Water, Land & Legacy Amendment

TABLE OF CONTENTS

Executive Summary 1

Land and Water Resources Summary 21

Issue Prioritization 67

Priority Issues, Targeting, and Measurable Goals 87

Implementation Schedules 117

Implementation Programs 151

Plan Administration and Coordination 181

Appendix A: Committee Members A3

Appendix B: Official Comment Letters A7

Appendix C: Data and Comments A39

Appendix D: Resource Prioritization and Issue Statements A67

Appendix E: BMP Details + Cost Assumptions A83

Appendix F: Kickoff Meeting and Survey Summaries A93

Appendix G: Midpoint Meeting and Survey Summaries A125

Appendix H: References A155

Appendix I: Acronyms + Glossary A161

00

EXECUTIVE SUMMARY

Did you know?

This plan was developed by, and will be implemented by, local government units across the Watershed (Partnership), as well as their partners from state and federal agencies, non-profits, citizens, and other stakeholders.

EXECUTIVE SUMMARY

Introduction

The Le Sueur River Comprehensive Watershed Management Plan (Plan) is a unifying strategy for water management in the Le Sueur River Watershed (Watershed). It was developed by, and will be implemented by, local government units across the Watershed (Partnership), as well as their partners from state and federal agencies, non-profit organizations, citizens, and other stakeholders. The Plan focuses on restoring impaired waters and habitats, protecting high quality lakes *(Figure 0.1)*, reducing peak flows through water storage, and protecting groundwater quality through resource management. Approximately 65 meetings of the various planning committees were held to develop the plan. Local government units also worked with the Water Resources Center through the Minnesota State University - Mankato to include input from non-agency stakeholders throughout the planning process.

This section covers:

- Watershed overview
- Planning management zones
- Participating local governments
- Roles and responsibilities
- Community engagement
- Plan development at a glance
- Prioritized issues list
- Resource categories
- Priority issue statements and goals
- Implementation actions and programs
- Plan administration and coordination

Figure 0.1 Reeds Lake

Did you know?
Participation in the One Watershed, One Plan (1W1P) process is not required if less than 10 percent of the jurisdictional land area of the local government is within the Watershed and will not be important to the success of the Plan.

Watershed Overview

The Watershed includes portions of the following counties *(Figure 0.2)*:

- Blue Earth County
- Faribault County
- Freeborn County
- Waseca County
- Le Sueur County
- Steele County

Due to the small amount of their counties within the watershed, Le Sueur and Steele counties and Soil and Water Conservation District (SWCD) chose not to participate in the Watershed planning process. Participation in the One Watershed, One Plan (1W1P) process is not required if less than 10 percent of the jurisdictional land area of the local government is within the Watershed and will not be important to the success of the Plan.

The Watershed is 1,112 square miles (711,000 acres) and is in southern Minnesota. The watershed is predominately agricultural land use, although 20 municipalities are located within the watershed *(Figure 0.3)*.

Planning Terminology

A set of planning terms were adopted at the beginning of the planning process to ensure consistency and application of planning terms. These definitions are provided throughout the Plan in orange text in the page sidebars.

Watershed Facts

1,112
Square Miles

711,000
Acres

6
Counties Found in Watershed

20
Municipalities Found in Watershed

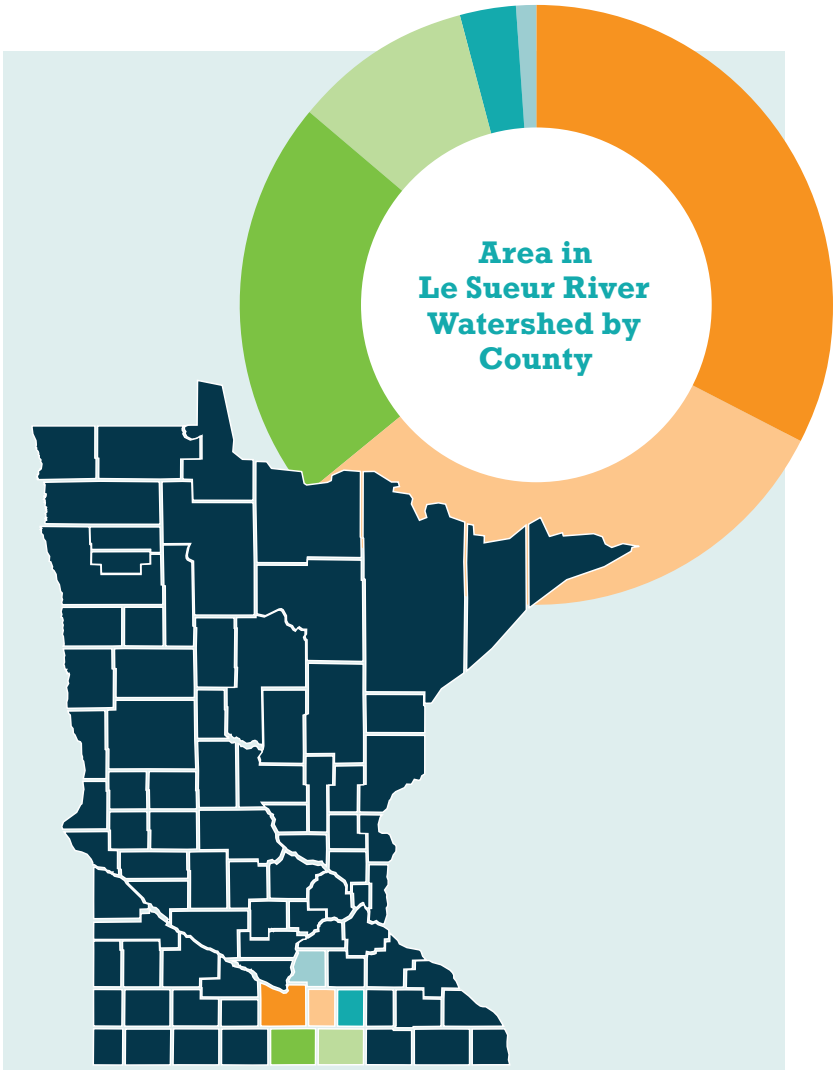


Figure 0.2: Counties and Area in the Le Sueur River Watershed by County

Figure 0.3: Le Sueur River Comprehensive Watershed Management Plan Watershed

Geomorphic
Relating to the form of the landscape and other natural features of the earth's surface.

Did you know?
The management zones were developed to make the process of prioritizing and targeting efforts by partners more manageable across the entire watershed.

9
Management zones

Planning Management Zones

Main Tributaries

The Watershed is divided into three main tributaries or drainage areas *(Figures 0.4–0.6)*:

- Cobb River
- Le Sueur River
- Maple River

Management Zones

Each of these tributaries has a:

- Lower Zone
- Middle Zone
- Upper Zone

This results in nine management zones *(Figure 0.7)*. These zones were developed during the planning process based on the major drainage areas across the Watershed along with landscape and **geomorphic** characteristics within each of those drainage areas. These zones were developed to make prioritizing and targeting efforts by partners more manageable across the entire watershed.

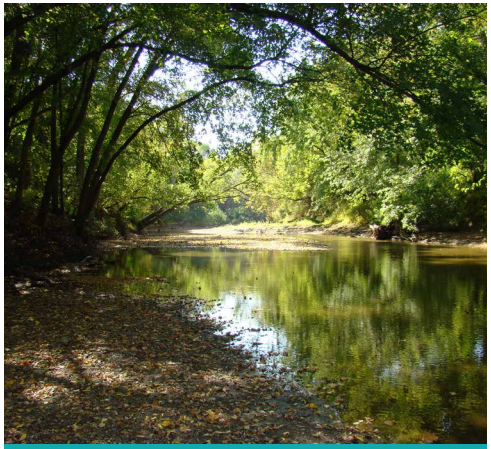


Figure 0.4: Le Sueur River (Source: Blue Earth County)

Figure 0.5: Le Sueur River (Source: Carrie Jennings)

Figure 0.6: Maple River (Source: Carrie Jennings)

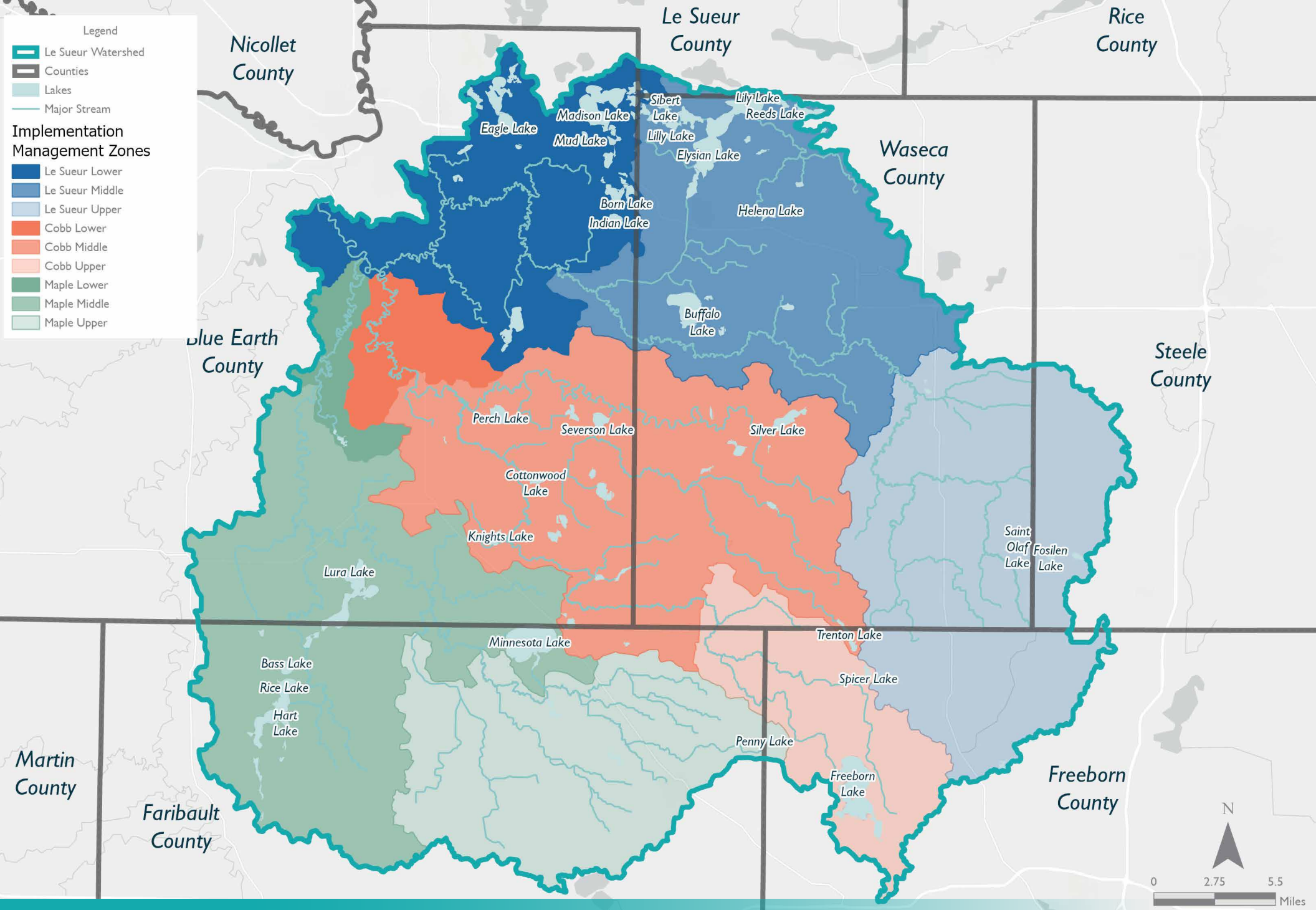


Figure 0.7: Le Sueur River Management Zones

Local Government Units (LGUs)
The Census Bureau has established five types for classifying local government units: county, municipal, township, special district, and school district governments.

Memorandum of Agreement (MOA)
A MOA is a document written between parties to cooperatively work together on an agreed upon project or meet an agreed upon objective. The purpose of a MOA is to have a written formal understanding of the agreement between parties.

Bylaw
A rule made by a company or society to control the actions of its members.

8
Local governments and entities recognized the need for watershed awareness

Participating Local Governments

The **local government units (LGUs)** involved in managing the Watershed resources recognized that Minnesota Board of Water and Soil Resources (BWSR)'s One Watershed, One Plan (1W1P) program provided a unique opportunity to develop a management plan that unifies and accelerates the restoration of degraded resources and protection of high-quality resources.

Learn more about BWSR here!
bwsr.state.mn.us

Learn more about the One Watershed, One Plan (1W1P) program here!
bwsr.state.mn.us/one-watershed-one-plan

The following entities recognized the need to increase coordination, reduce potential duplication of activities, and provide greater assurances for meeting measurable goals. Soil and water conservation district names are abbreviated throughout the document.

- Blue Earth County
- Blue Earth County Soil and Water Conservation District
- Faribault County
- Faribault County Soil and Water Conservation District
- Freeborn County
- Freeborn County Soil and Water Conservation District
- Waseca County
- Waseca Soil and Water Conservation District

Le Sueur River 1W1P Steering Team (Partnership)

The Le Sueur River 1W1P Steering Team (Partnership) was established and worked collaboratively to develop and submit a response to a BWSR-generated Request for Proposals. Upon application for BWSR funding and approval, the collaborative arrangement was formalized through a **Memorandum of Agreement (MOA)** and subsequent **bylaws** that were approved. The local governments listed above entered into the Memorandum of Agreement. *Figure 0.3* shows the jurisdictional boundaries in the Watershed.

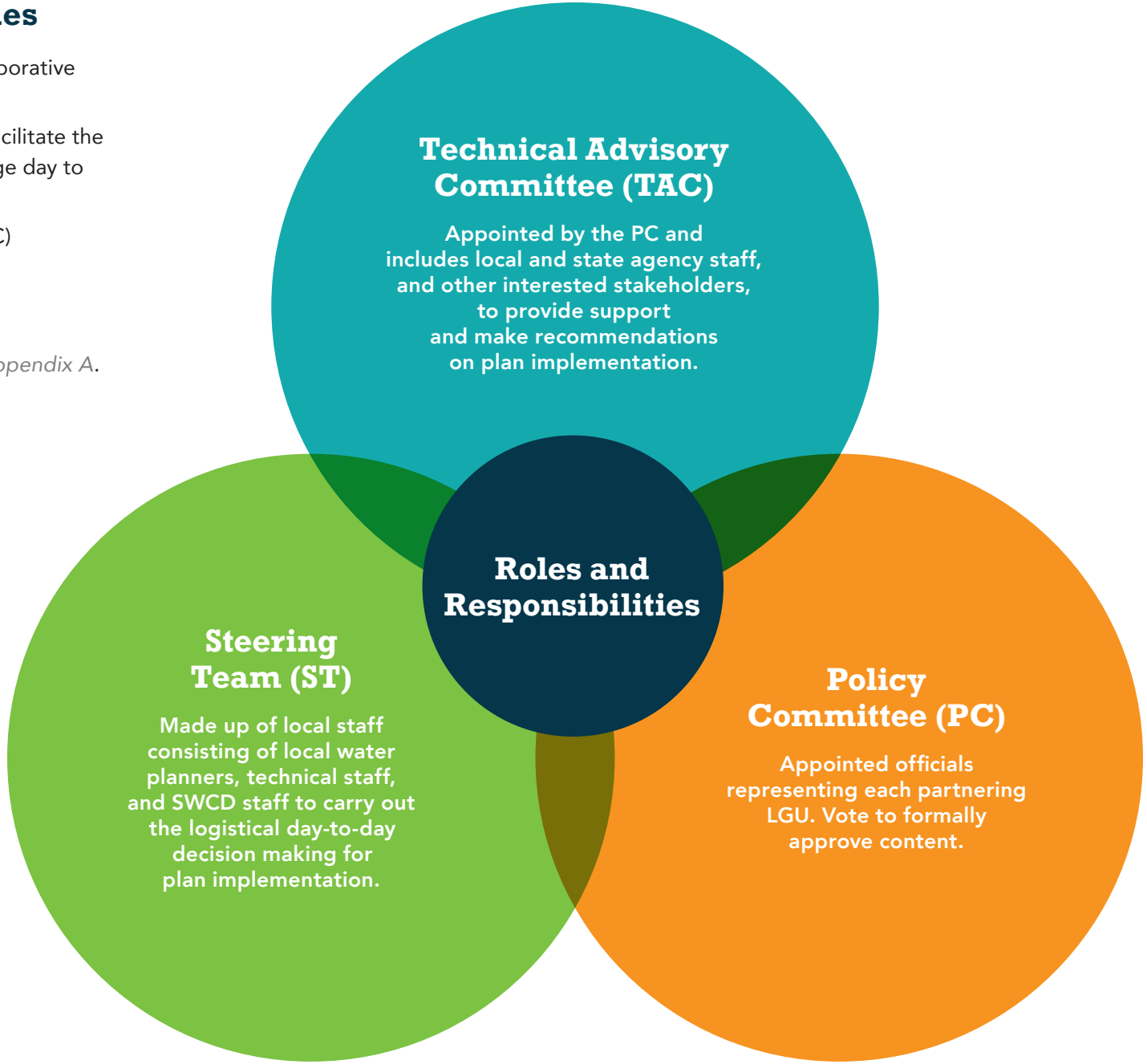
Roles and Responsibilities

The development of the Plan was a collaborative effort by all members of the Partnership.

Three committees were established to facilitate the creation of plan content as well as manage day to day operations.

- Technical Advisory Committee (TAC)
- Steering Team (ST)
- Policy Committee (PC)

Committee membership is detailed in *Appendix A*.



Water Planning and Project Implementation MN §103B

revisor.mn.gov/statutes/cite/103B

Minnesota State University, Mankato, Water Resources Center (WRC)

cset.mnsu.edu/wrc/

2
Online public input surveys

1
Kick-off meeting

1
Mid-point meeting

Community Engagement

Public Notices

This Plan is governed by Minnesota Statute 103B, and public notices were published in each local government's designated legal newspaper. The official 45-day public notice of the intent to plan and corresponding comment period began on March 30, 2021, and ended on May 29, 2021. Eight comment letters were received *(see Appendix B)*. The public were provided opportunity to submit comments during the 60-day review period held from December 20, 2022 to February 18, 2023. A final public notice was issued for the public hearing held on March 24, 2023.

Public Input Meetings

The Minnesota State University, Mankato, Water Resources Center (WRC) planned, facilitated, and summarized the public engagement portion of the planning process *(see Figures 0.8–0.10)*. The process included two online public input surveys, one kick-off meeting at the beginning of the planning process, and one mid-point meeting half-way through the planning process.

To accommodate busy schedules and lingering concerns from the pandemic, both meetings also had a corresponding online survey that was available before, during, and after the meeting as an alternative means for providing input. The WRC provided summaries of both public input meetings and corresponding surveys (see *Appendices F and G*).

The information gathered from the kick-off meeting and corresponding survey was used as a starting point for developing a list of priority issues and concerns that was later aggregated and filtered into the plan document.

Feedback gathered from the mid-point meeting and corresponding survey was used to gain additional public input, review priority resource concerns, and confirm that the initial public feedback received had been captured adequately and integrated into the planning framework.

Adjustments to the plan framework were made as needed to further incorporate the feedback received. Additional details on the feedback received are in *Section 2*.

Figure 0.8: Input Meeting

Figure 0.9: Input Meeting

Figure 0.10: Input Meeting

Plan Development at a Glance

Figure 0.11 represents the process of gathering, refining, and prioritizing issues, resources, and implementation actions related to watershed management throughout the planning process.

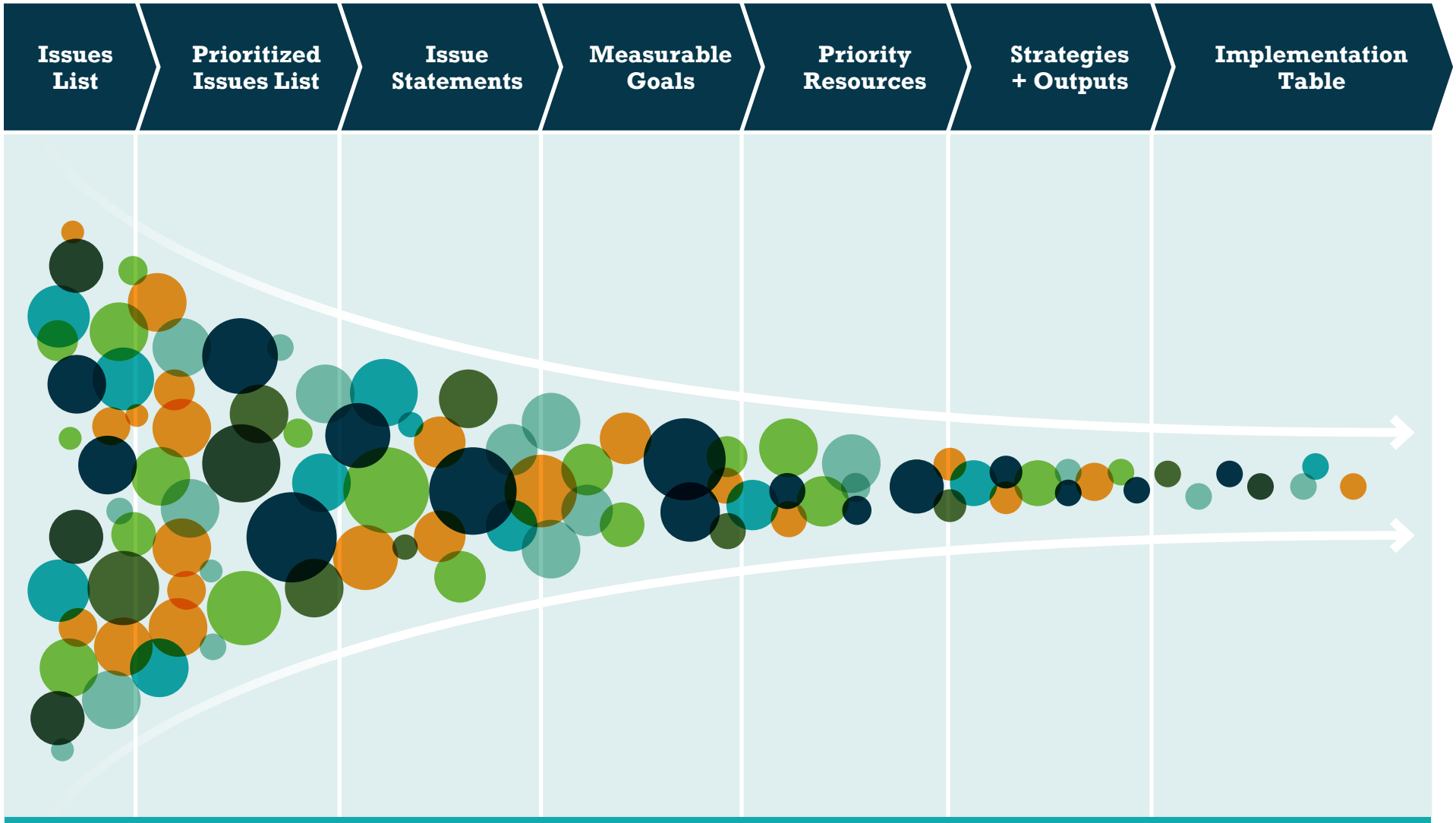


Figure 0.11: Plan Development Graphic

Priority Issue Statement
The agreed upon issues that are identified as the focus of the Plan though a prioritization process.

Issue
Problems, risks, or opportunities for a watershed's priority resources.

Prioritized Issues List

The issues for the Le Sueur River Comprehensive Watershed Management Plan (Plan) were generated and prioritized with input from the public, ST, TAC, PC, state agencies, and existing local management plans and studies *(see Figure 0.12)*.

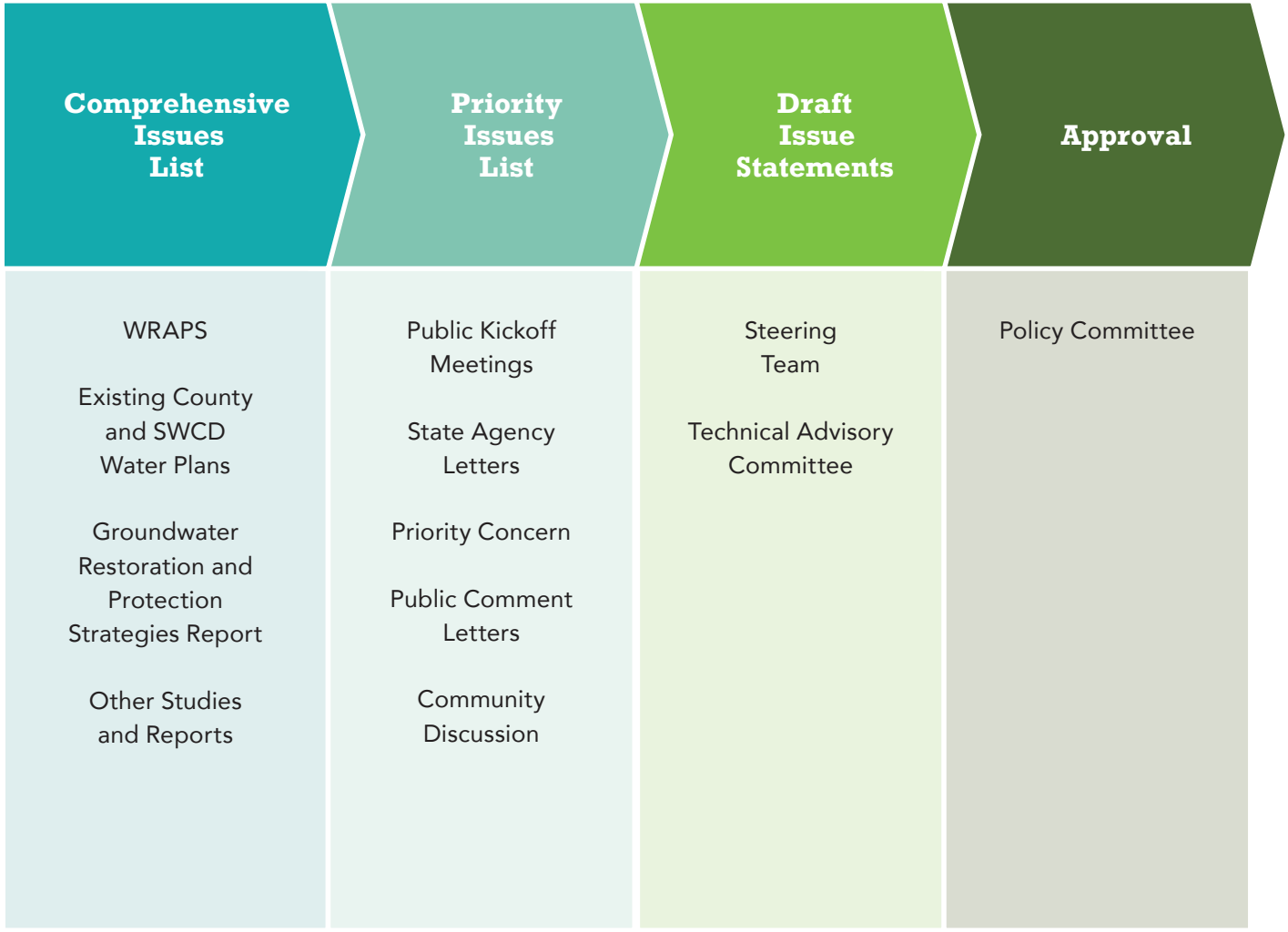


Figure 0.12 Prioritized Issues List

Resource Categories

Broad Resource Types

One of the first steps of the planning process is **data aggregation**. This process involves the review of all existing natural resource plans, studies, and related documents within the watershed and compiling local priorities and key takeaways from each document. Comments from the public, state agencies, local units of government, and other interested parties were also reviewed and incorporated into this process. All the comments and data gathered during the data aggregation process were grouped according to the type of resource the data addressed. There were three broad resource types.

Surface water

Groundwater

Natural resources

Non-Resource Categories

Although it is not a specific resource type, a leadership category also emerged as a priority throughout the data aggregation process, capturing concerns related to educational efforts for the public and decision makers, general support of conservation work, and more. Emerging issues and quality of life categories contained fewer concerns, but were still worth mentioning.

Leadership

Emerging issues

Quality of life

Categorization

Within each resource type, data were categorized according to major themes, such as the quality or quantity of the resource. Finally, each comment and data point was further classified as a value, concern, or strategy.

The values and concerns for each resource category were considered in drafting the issue statements. Strategies were considered as means to address the issue statements after the preliminary goals were established.

Data Aggregation
Data aggregation is the compiling of information from databases with intent to prepare combined datasets for data processing.

Priority Issue Statements and Goals

Table 0.1 contains a summary of all individual issue statements that were developed through the data aggregation process, including those that were not carried forward through the planning process. Each statement below was reviewed by the Technical Advisory Committee and Steering Team, and ranked according to level of priority, as shown by the weighted averages in the table. Issue statements were ranked high (an absolute priority or inclusion in this 10-year plan), medium (a priority, but only if time and money allow), and low priority (not a priority for this 10-year plan and okay to not include in plan) as shown in the table below. As the TAC and ST provided feedback, issue statements with overlapping content or high value secondary benefits were combined. Those combined issue statements are presented later in the plan document as the 9 priority issue statements.

Table 0.1: Issue Statements

High Priority Issue Statements	Weighted Average
There is degraded water quality in rivers and streams due to high sediment and nutrient loading.	7
There is degraded water quality in lakes due to excess nutrients, specifically phosphorus.	6.63
Increases in peak flows and annual flow volume as a result of altered hydrology, shifts in cropping practices, increase in drainage, and decrease in evapotranspiration.	6.63
Degraded soil health has led to reduced soil water retention, decreased infiltration, and increased erosion furthering the impacts of altered hydrology.	6.25
Erosion of agricultural lands delivers sediments to waterbodies.	6.25
Ravine, bank, and bluff erosion contribute sediment to rivers and streams and pose a risk to damage or loss of public and private infrastructure.	5.88
A significant loss of wetlands and wetland function from historical ditching, drainage, and land use changes.	5.88
Increased precipitation amounts and intensities contribute to higher peak flow rates and increased volume of runoff.	5.5
Increases in flooding frequency and intensity has created risks to public safety and vital infrastructure.	5.13
The Le Sueur River delivers large sediment loads to downstream waters such as the Blue Earth River, Minnesota River, and Lake Pepin.	5.13
A lack of technical understanding amongst decision makers and public related to issues and strategies for protection of surface water, groundwater quality and quantity, and drinking water.	5.13

Table 0.1 (Continued): Issue Statements

Medium Priority Issue Statement	Weighted Average
Streams are impaired due to high E. Coli (bacteria) levels in surface waters.	4.75
A lack of implementation of multipurpose drainage management practices.	4.75
The implementation of voluntary best management practices has not met the level of adoption needed to meet watershed goals.	4.75
Poor surface water quality and habitat degradation limit outdoor recreation.	4.75
A reduction in quality and quantity of riparian and shoreland habitat.	4.38
Poor water quality causes a lack of diversity and abundance in aquatic life and habitat.	4.38
Increased flood risk due to reduction or loss of floodplain connectivity.	4
Insufficient collaboration and coordination between citizens, LGUs, and state agencies.	4
Elevated contaminants in groundwater, particularly nitrates, are an ongoing threat to drinking water quality and public health.	4
Urban, industrial, and commercial runoff contaminants such as pesticides, fertilizers, oil, metals, pathogens, salt, debris, etc. degrade water quality.	3.63
Aquatic invasive species (AIS) threaten native ecosystems and recreational opportunities.	3.63
Limited staff capacity, staff turnover, and funding limit progress toward watershed goals	3.63
A loss of groundwater recharge as a result of altered hydrology.	3.63
There is insufficient testing of groundwater contaminants to assess drinking water quality and safety.	3.63
The Le Sueur River delivers large nutrient loads to downstream waters including the Mississippi River and the Gulf of Mexico.	3.25
A loss or degradation of natural corridors fragments upland habitat.	3.25

Table 0.1 (Continued): Issue Statements

Low Priority Issue Statement	Weighted Average
Terrestrial invasive species threaten native ecosystems and recreational opportunities.	2.88
A lack of monitoring data, analysis, and research across the watershed to assess waterbodies and inform watershed planning.	2.5
A lack of consistency and coordination across and between counties in the process and proceedings of drainage management.	2.5
State programs do not allow enough flexibility to meet local needs.	2.5
Increases in impervious surfaces in urban areas increase runoff volumes and velocities.	2.13
Contaminants of emerging concern (PFAS, PCBs, etc.) pose an uncertain risk to human health	2.13
There may be a lack of regulatory controls on development in and near sensitive habitat areas	1.75
A lack of consistency and coordination across and between counties related to ordinances, policy, and enforcement.	1.75
Barriers such as dams, weirs, and culverts restricts aquatic connectivity.	1.38

Aggregated By Resource Concern

Once the issue statements were ranked high, medium, and low priority, they were aggregated by resource concern to create concise issue statements for each concern. *Table 0.2* shows the high priority aggregated issue statements, organized by resource concern. The table also contains individual weighted averages for each issue statement and an overall resource concern average. These averages determined the resource concern ranking shown in the left-hand column. These issue statement were determined to be the top priority for the watershed and will be the focus areas that this plan will address in the next 10 years.

Table 0.2: Priority Issue Statements Aggregated By Resource Concern

Rank	Resource Concerns	Issue Statement(s)	Individual Issues Weighted Average	Resource Concern Total Averages
1	Water Quality in Rivers and Streams	There is degraded water quality in rivers and streams due to high sediment and nutrient loading.	7	7
2	Water Quality in Lakes	There is degraded water quality in lakes due to excess nutrients, specifically phosphorus.	6.63	6.63
3	Erosion	Degraded soil health has led to reduced soil water retention, decreased infiltration, and increased erosion furthering the impacts of altered hydrology.	6.25	6.13
		Erosion of agricultural lands delivers sediments to waterbodies.	6.25	
		Ravine, bank, and bluff erosion contribute sediment to rivers and streams and pose a risk to damage or loss of public and private infrastructure.	5.88	
4	Water Quantity and Flooding	Increases in peak flows and annual flow volume as a result of altered hydrology, shifts in cropping practices, increase in drainage, and decrease in evapotranspiration.*	6.63	5.75
		Increased precipitation amounts and intensities contribute to higher peak flow rates and increased volume of runoff.*	5.5	
		Increases in flooding frequency and intensity has created risks to public safety and vital infrastructure.*	5.13	

**Combined into one issue statement to reflect complexity and interconnectedness of factors influencing water quantity, rate, and flooding.*

Table 0.2 (Continued): Priority Issue Statements Aggregated By Resource Concern

Rank	Resource Concerns	Issue Statement(s)	Individual Issues Weighted Average	Resource Concern Total Averages
5	Wetlands	A significant loss of wetlands and wetland function from historical ditching, drainage, and land use changes.	5.88	5.88
6	Leadership	A lack of technical understanding amongst decision makers and public related to issues and strategies for protection of surface water, groundwater quality and quantity, and drinking water.	5.13	4.88
		The implementation of voluntary best management practices has not met the level of adoption needed to meet watershed goals.	4.75	4.75
7	Bacteria in Rivers and Streams	Streams are impaired due to high E. Coli (bacteria) levels in surface waters.	4.75	4.75
8	Riparian and Shorelands	A reduction in quality and quantity of riparian and shoreland habitat.	4.38	4.38
9	Groundwater Protection	Elevated contaminants in groundwater, particularly nitrates and arsenic, are an ongoing threat to drinking water quality and public health.	4	4

Measurable Goals

Measurable goals for each issue statement were established to guide the development of strategies and implementation action items. A review of previous studies and existing resources was conducted to build a draft list of strategies and implementation actions. This list was reviewed, along with the issue statements, to determine what additional strategies and implementation actions were needed to fully address the priority issue statement goals. This process led to a final list of strategies and implementation actions that would be used to develop the measurable goals. The Hydrologic Simulation Program – Fortran (HSPF) watershed model and spreadsheet targeting tool provided ISG with the necessary tools to simulate the impacts of the Steering Team's selected implementation actions and develop numeric, measurable goals. The Plan's goals were compared to the goals in the WRAPS for a point of reference regarding the Steering Team's desired achievements. Existing and desired level of effort was used for measurable goals that lack appropriate models or studies to quantify, such as outreach and education and groundwater quality actions. Once the implementation tables were assembled, the goals and measurable goals were refined to better align with the anticipated level of effort and expected funding levels for each action item. Details for each priority issue and targeting approach are provided in *sections 3 and 4*.

Implementation Actions and Programs

The activities that will be undertaken to address the priority issues are presented in the Plan. The existing implementation programs are detailed in *Section 5*, and the anticipated efforts for implementation actions are summarized within the implementation tables in *Section 4*. Plan implementation costs, based on the implementation tables, is approximately $29,602,100. These efforts include 56 unique BMPs or action items, and will result in reductions at the Le Sueur River outlet totaling 3% reduction for total suspended solids, 5% reduction for total phosphorus, and a 2% reduction for total nitrogen. To keep implementation efforts organized, separate tables were completed for Best Management Practices (BMP), Education and Outreach, and Data, Studies, and Monitoring. Tracking implementation and completion of items within the implementation tables will assist the Partnership with reporting progress towards achieving the identified measurable goals detailed in *Section 3*. Tracking will be completed by calculating project reductions and compiling them in a spreadsheet to develop running totals. The spreadsheet will be developed by the Steering Team after the Plan has been adopted.

Plan Administration and Coordination

The Policy Committee decided to form a Joint Powers Collaboration upon plan adoption. The Joint Power Collaborative will develop appropriate legal obligations and corresponding content. The agreement will clearly establish the roles and responsibilities of all signing entities to implement the Plan. Plan implementation will be coordinated by the plan coordinator and fiscal agent. These representatives from the partnership will work together to guide the group through work planning and project selection, grant reporting, and other tasks as necessary. The plan coordinator will schedule and facilitate meetings, and be responsible for bringing information to the Policy Committee to review.

01

LAND AND WATER RESOURCES SUMMARY

Did you know?

The total distance of the stream network within the Watershed is 1,201 miles of which 703 miles are intermittent streams and 498 miles are perennial streams.

LAND AND WATER RESOURCES SUMMARY

Introduction

The Watershed includes portions of Blue Earth, Faribault, Freeborn, and Waseca counties, along with small portions of Steele and Le Sueur *(Figure 1.1)* Located within the Minnesota River Basin in South Central Minnesota, this watershed covers approximately 711,000 acres *(MPCA, Le Sueur River WRAPS Report, 2015)*. The watershed drains to the Blue Earth River and Minnesota River, ultimately flowing into the Mississippi River to the Gulf of Mexico. This area is predominately rural with over 83% of the land in agriculture, 93% which is corn and soybeans. A vast majority of the watershed is located in the Western Corn Belt Plains—a Level III **ecoregion** designated by the Environmental Protection Agency (EPA)—with a small area located in and near Le Sueur County, within the North Central Hardwood Forests Ecoregion.

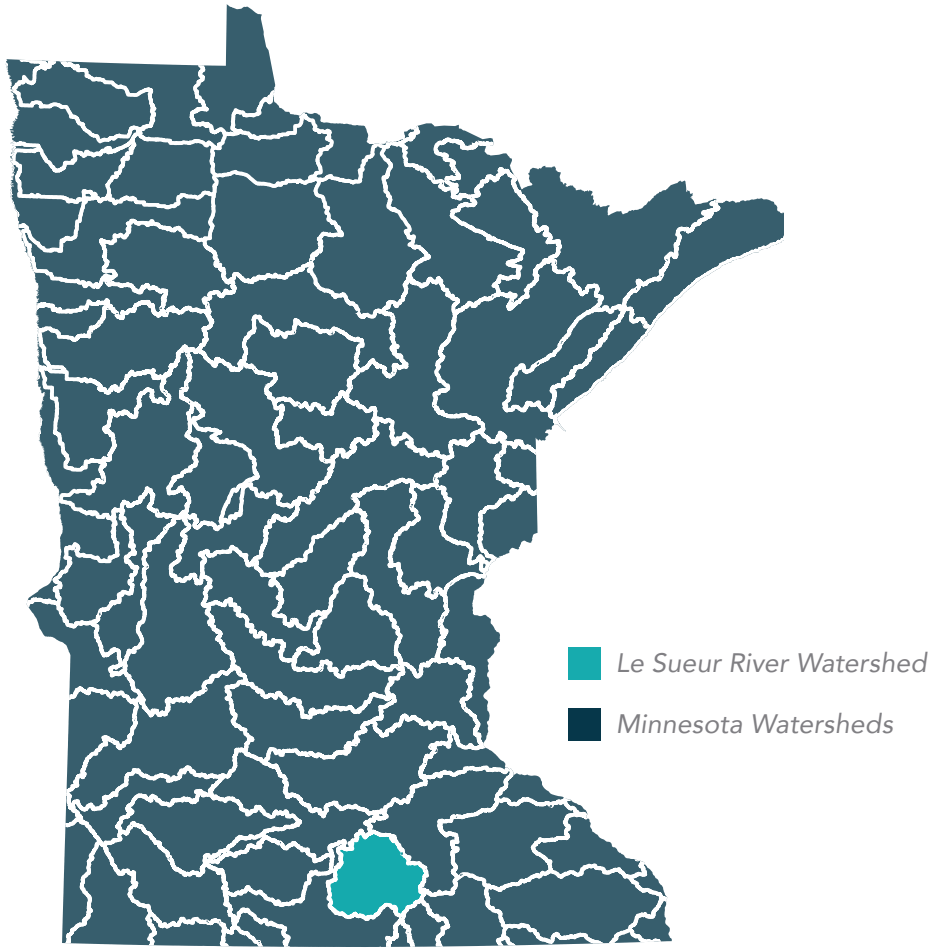


Figure 1.1: Minnesota Watersheds

Intermittent Streams
A stream which ceases to flow in very dry periods

Perennial Streams
A stream that has continuous flow of surface water throughout the year

Ecoregion
Areas where ecosystems are generally similar to assist with resource management. Various levels of ecoregions are mapped by the EPA to provide broad and more detailed regions.

1,112
Square Miles

711,000
Acres

86
Minor Watersheds

6
Counties Found in Watershed

20
Municipalities Found in Watershed

Figure 1.2: Management Zones for Implementation

Topography, Soils, and Geology

Land use in the Le Sueur River Watershed (Watershed) has changed substantially since European settlement in the 1860s. Artificial drainage and tillage transformed natural native prairies and hardwood forests to agriculture land. These changes to **hydrology** left the area with an extensive ditch and tile system, both private and public *(Figures 1.4-1.5)*.

Figure 1.3: Lake Agassiz

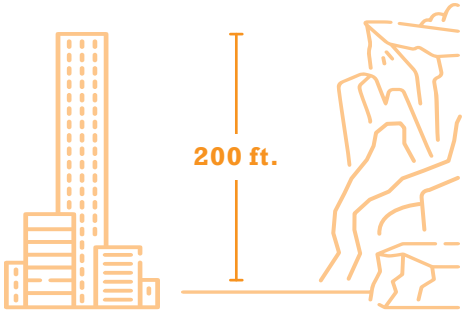
Approximately 16,000 years ago the Des Moines Lobe glacier covered the Watershed. The retreat of the glacier left Lake Agassiz in its place in northwestern Minnesota, eastern North Dakota, and Canada *(Figure 1.3)*. Eventually the River Warren was created at an outlet of Lake Agassiz, carving the Minnesota River Valley. From this valley, all tributaries, including those within the Watershed, were formed. Soils in the Watershed are primarily loamy glacial till with a high percentage of clay and silt. Coarse-textured soils are located mainly in the lower reaches of the Le Sueur, Maple, and Cobb Rivers. **Geology** is primarily glacial lake sediments to the west with ground moraine and stagnation moraine to the east, and minimal areas of outwash and alluvium. A county geologic atlas was completed for Blue Earth County and is in progress for Waseca and Freeborn Counties.

Recent research shows the largest sources of sediment are from channel, bank, and bluff erosion. The geologic history of the watershed leaves certain areas naturally vulnerable to erosion. Watershed-wide, however, stream and river instability are resulting in high erosion rates, poor habitat, loss of land, degraded water quality, and impacts to nearby infrastructure. Steep eroding bluffs are common in the lower portions of the watershed within the Cobb, Maple, and Le Sueur River channels. According to a study by the National Center for Earth Surface Dynamics, there are over 460 near channel bluffs in lower reaches of the Watershed. The Le Sueur River and many of its tributaries are impaired for turbidity or total suspended solids.

Extensive Ditch and tile system

Naturally Vulnerable to Erosion

Large Bluffs are Common



Did you know?
The tallest bluffs in the Watershed are just over 200 feet high. That's as tall as a 20-story building!

Topography
A detailed description or representation on a map of the natural and artificial features of an area.

Hydrology
The branch of science concerned with the properties of the earth's water, and especially its movement in relation to land.

Geology
The science that deals with the earth's physical structure and substance, its history, and the processes that act on it.

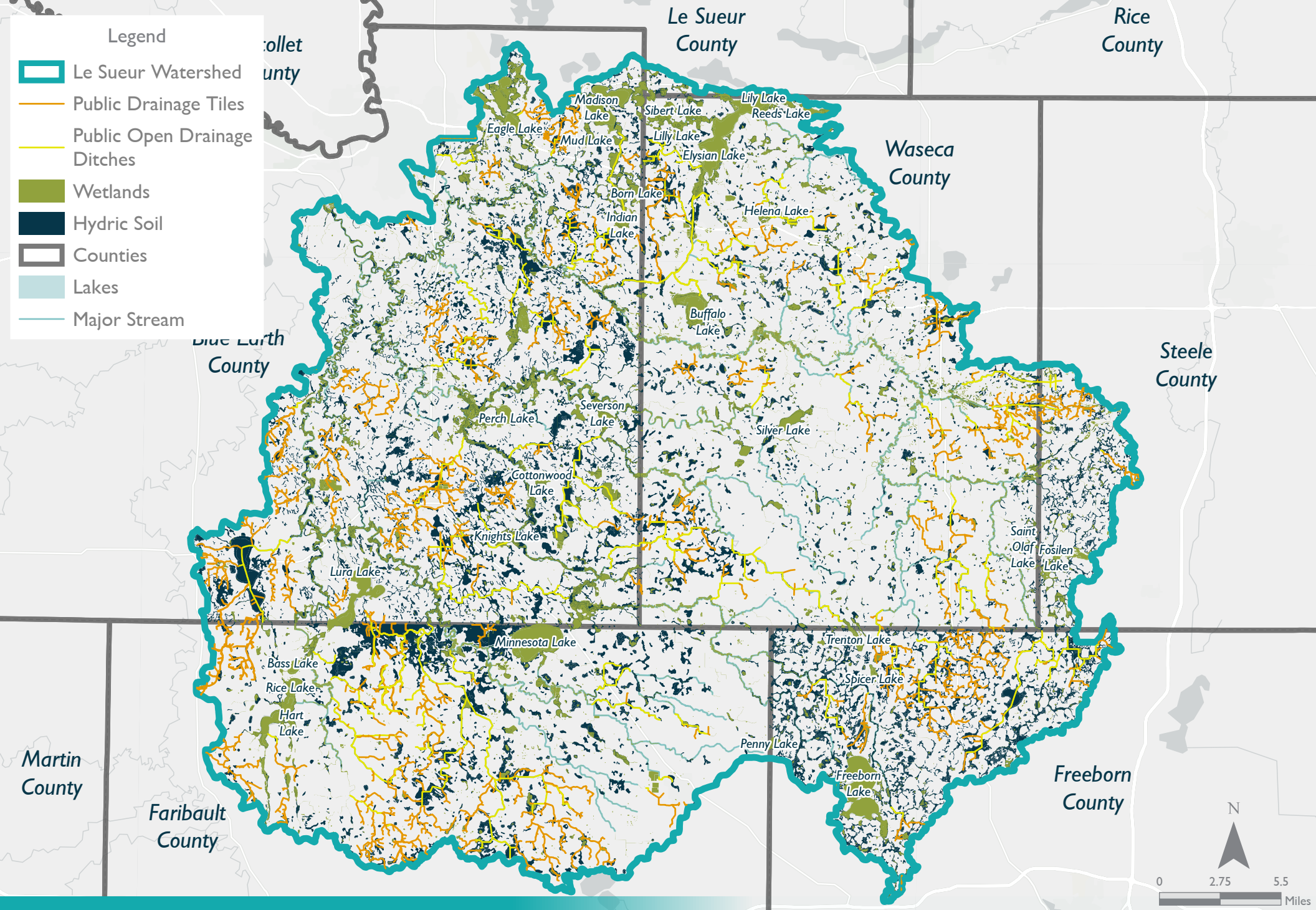


Figure 1.4: Public Drainage, Wetlands, and Hydric Soils Map

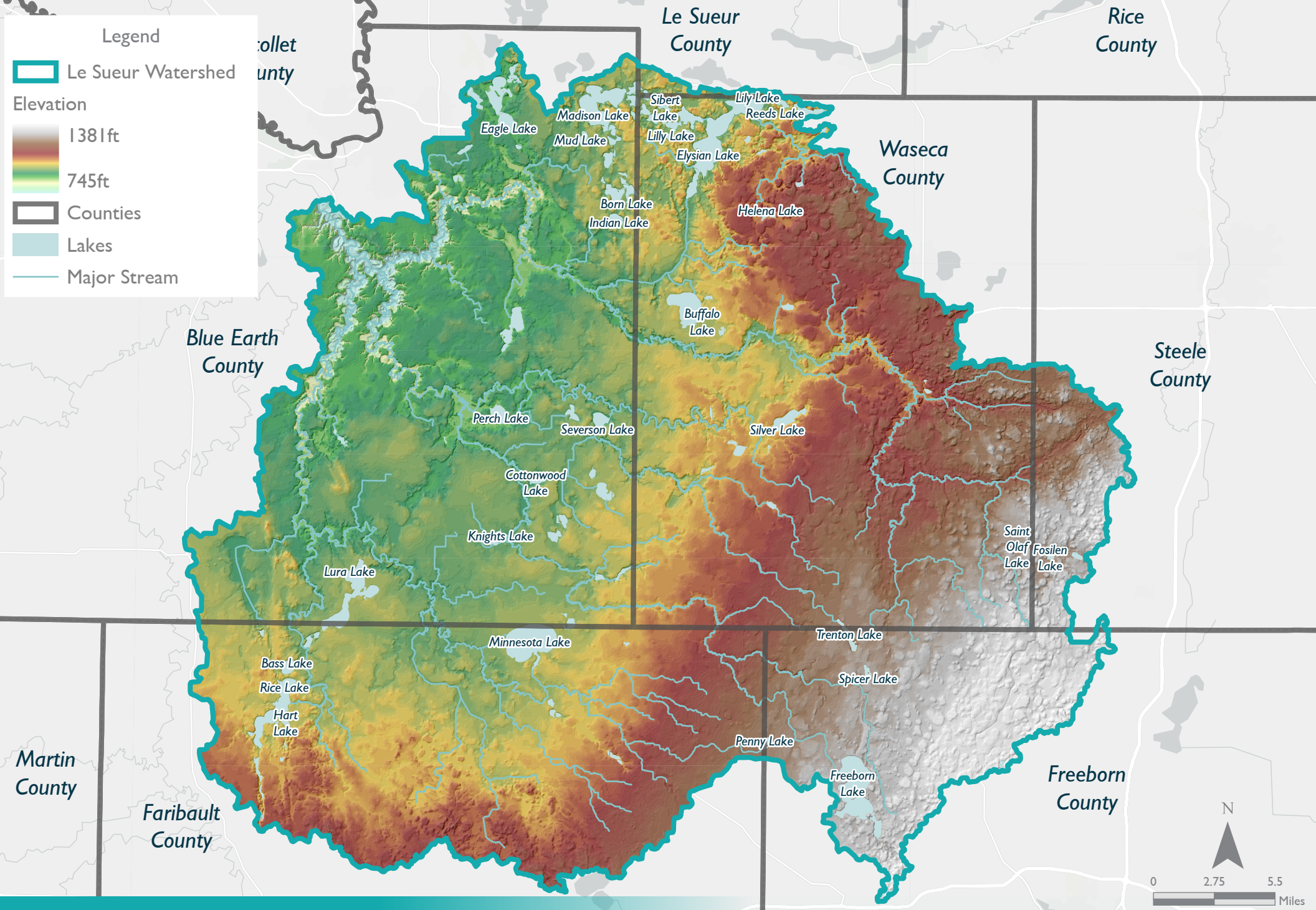


Figure 1.5: Elevation Map

Impairment
Waterbodies that do not meet the state water quality standard for designated uses including aquatic life, aquatic recreation, and aquatic consumption.

Turbidity
The quality of being cloudy, opaque, or thick with suspended matter.

Riparian
Relating to or situated on the banks of a river.

133
Impairments in Lakes and Streams within the Watershed

72
Lakes within the Watershed

Surface Water Resources

The Minnesota Pollution Control Agency (MPCA) conducts water quality assessments as a part of an intensive watershed monitoring program to determine the condition of surface waters in the state. These assessments show that the Watershed is similar to its neighbors in southern Minnesota, with stressors of elevated nutrients and fish bioassessment resulting in most of the **impairments** in lakes *(Table 1.1 and Figure 1.51)*. Streams have various pollutants or stressors of **turbidity**, nutrients, E. coli/fecal coliform, fish bioassessments and macroinvertebrates bioassessments. In total, there are 133 impairments from six lakes and 39 streams within the Watershed *(Table 1.2 and Figure 1.6)*. Of these impairments 110 are for aquatic life and aquatic recreation based on criteria for the area. The remaining impairments are for aquatic consumption, which has a state-wide initiative, and will not be addressed in this Plan.

There are 72 lakes in the Watershed. Of these lakes, Reeds and St. Olaf were found to be not impaired and fully supporting recreational use, both however, do have an aquatic consumption impairment due to mercury in fish tissue. Eagle, Elysian, Freeborn, Madison, and Lura lakes are impaired for impacts to aquatic recreation and aquatic life due to nutrients and fish bioassessments. The remaining lakes within the Watershed had insufficient data to make a formal assessment.

Water control structures are located within the Watershed, primarily dams controlling the outlets on multiple lakes, such as Elysian, Buffalo, Silver, Eagle, Madison, and Freeborn. Fish barriers are on the outlets of Freeborn Lake and Lake Elysian.

While there are many lakes within the Watershed, several stand out due to the following factors: recreational use, work that has been done on the lake, and standards being met. These lakes are briefly described on the following pages.

Key Concerns within the Watershed

- Bacteria in rivers and streams
- Riparian and shorelands
- Water quantity and flooding
- Erosion
- Water quality in streams
- Wetlands
- Groundwater protection and leadership
- Water quality in lakes and rivers

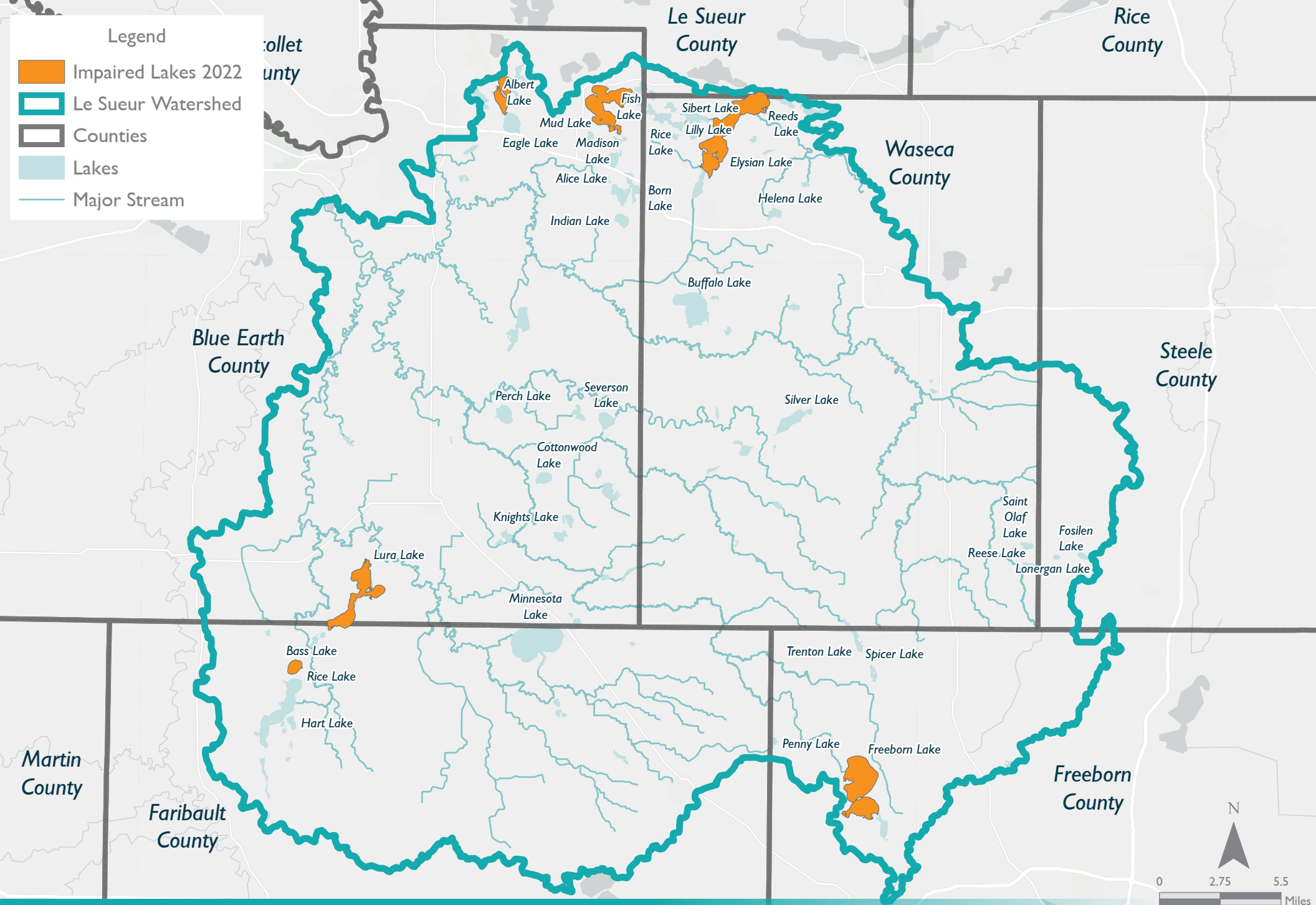


Figure 1.6 Impaired Lakes (Source: 2022 MPCA Impaired Waters List)

Table 1.1: Impaired Lakes (Source: 2022 MPCA Impaired Waters List)

Lake Name	Management Zone/Subwatershed	Affected Designated Use	Pollutant/Stressor
Bass Lake	Middle Maple River	Aquatic life	Fish bioassessments
Eagle Lake (North)	Lower Le Sueur River	Aquatic recreation	Nutrients
Elysian Lake (Main Lake)	Middle Le Sueur River	Aquatic recreation	Nutrients
Freeborn Lake	Upper Cobb River	Aquatic recreation	Nutrients
Lura Lake	Middle Maple River	Aquatic life	Fish bioassessments
		Aquatic recreation	Nutrients
Madison Lake	Lower Le Sueur River	Aquatic life	Fish bioassessments
		Aquatic recreation	Nutrients

THIS PAGE INTENTIONALLY LEFT BLANK

Freeborn Lake

Freeborn Lake is a large, shallow lake at 2,034 acres in size and is located next to the City of Freeborn. It is impaired for aquatic recreation due to nutrients.

To improve water and habitat quality in Freeborn Lake, a fish barrier was installed at the outlet stream, and following that, a drawdown took place from fall 2017 to spring 2019, where it was eventually restocked with northern pike and yellow perch.

This lake is avidly used for duck hunting and borders Arrowhead Park, a Freeborn County maintained park consisting of 60 acres of forest *(Figures 1.7–1.13)*.

Figure 1.7: Park Sign

Figure 1.8: Park Shelter

Figure 1.9: Freeborn Lake

Figure 1.10: Freeborn Lake

Figure 1.11: Freeborn Lake

Figure 1.12: Freeborn Lake

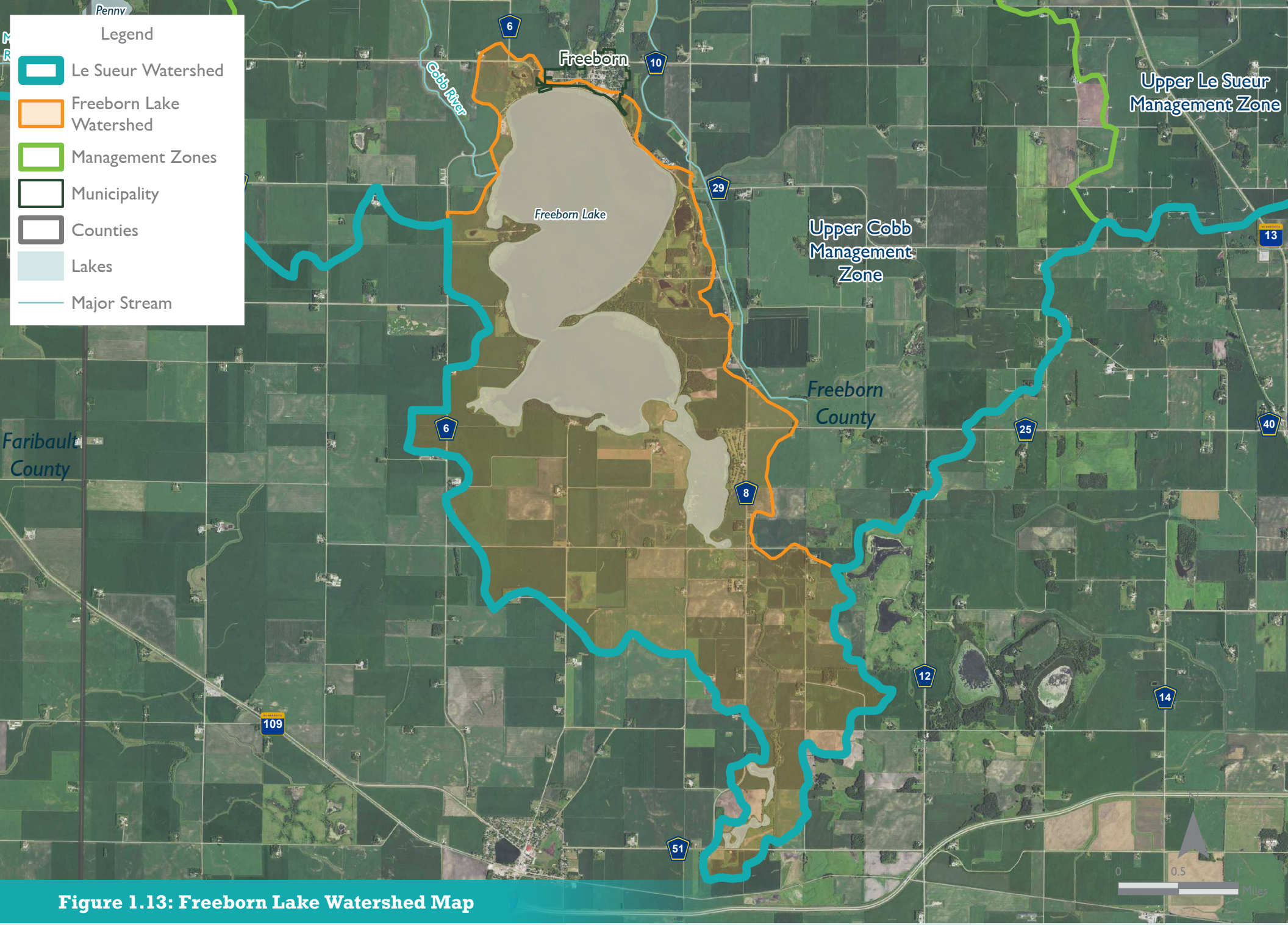


Figure 1.13: Freeborn Lake Watershed Map

Bass Lake

Bass Lake is a 199-acre lake located in Faribault County northeast of Winnebago. It is the most popular recreational lake in Faribault County.

A 2018 lake survey from the Minnesota Department of Natural Resources (DNR) fisheries showed a desirable fish community that included walleye, northern pike, yellow perch, and black crappies *(see Figures 1.14–1.17)*. However, Bass Lake was determined to be non-supporting of aquatic life and was listed as impaired on the 2022 303(d) Impaired Waters List.

Bass Lake watershed is comprised of a mix of agricultural and forested land, with a shoreline that is well developed. The lake subwatershed is also small relative to its surface water area.

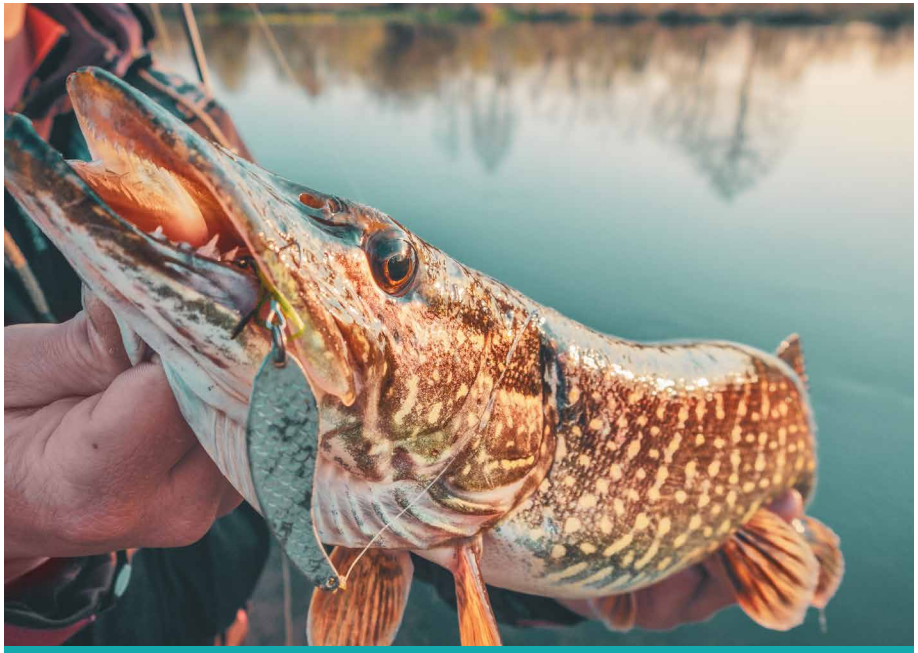


Figure 1.14: Northern Pike

Figure 1.15: Perch

Figure 1.16: Crappie

Figure 1.17: Bass Lake Watershed Map

St. Olaf Lake

St. Olaf Lake, located in Waseca County and 91 acres in size, is regularly used through its namesake park, which features a boat ramp, beach, and picnic area.

The lake contains a large number of aquatic plants and is infested with curlyleaf pondweed *(Figure 1.22)*.

It was chosen for the DNR Sentinel Lakes Program due to it being a deeper prairie lake with an approximately 30-foot maximum depth.

Fish community is primarily comprised of fish from the Centrachid family, including sunfish, bluegill, crappie, and largemouth bass. St. Olaf Lake is one of two lakes in the Watershed that meets recreational use standards *(Figure 1.18–1.21, I.23–1.24)*.

Figure 1.18: Beach and Fishing pier

Figure 1.22: Curlyleaf Pondweed

Figure 1.20: Crappie

Figure 1.23: Hybrid Sunfish

Figure 1.19: Rain Garden Project

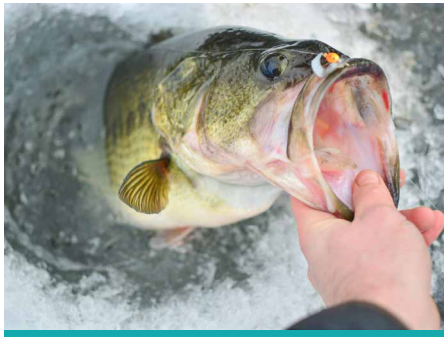


Figure 1.21: Largemouth Bass

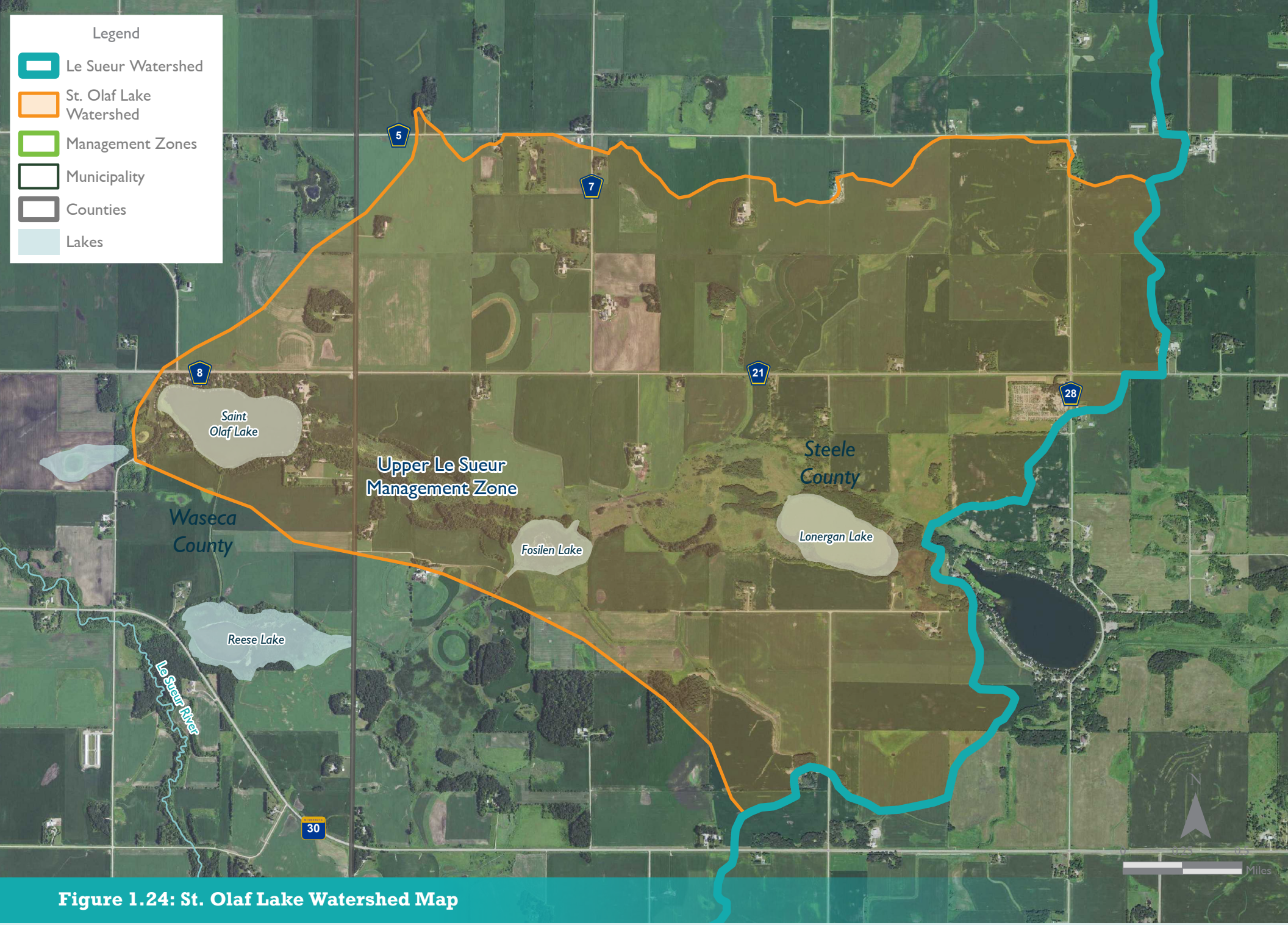


Figure 1.24: St. Olaf Lake Watershed Map

Madison Lake

Madison Lake, a lake 1,447 acres in size, is known for its walleye population making it a very popular recreational and fishing lake *(see Figures 1.25–1.31)*.

It also is the only known inland lake with a population of gizzard shad. This fish is believed to have migrated from the Le Sueur River through an unnamed stream located at the outlet of the lake. Since then, the DNR installed a fish barrier to prevent future movement of aquatic invasive species from the Minnesota River and its tributaries.

Madison Lake is home to Bray Park, a popular county park and campground. The watershed of this area is vast and is dominated by agriculture, however the lakeshore and surrounding area is heavily developed. In the early 2010s, a sewer district was created for dwellings outside the City of Madison Lake so there are very few septic systems within the lake's subwatershed.

As another lake chosen for the DNR Sentinel Lakes Program, water quality data is plentiful, though it is impaired due to nutrients and fish bioassessments.

Figure 1.25: Ice fishing

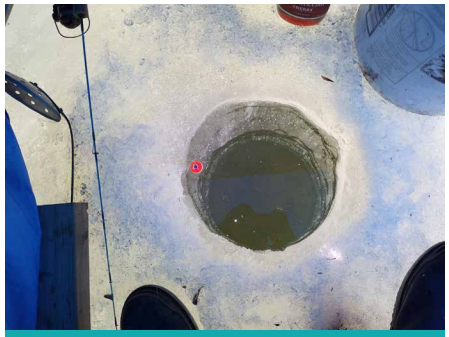


Figure 1.26: Ice fishing

Figure 1.27: Ice fishing

Figure 1.28: Bray Park (Source: BEC)

Figure 1.29 Line Pine Park (Source: BEC)

Figure 1.32: Line Pine Park (Source: BEC)

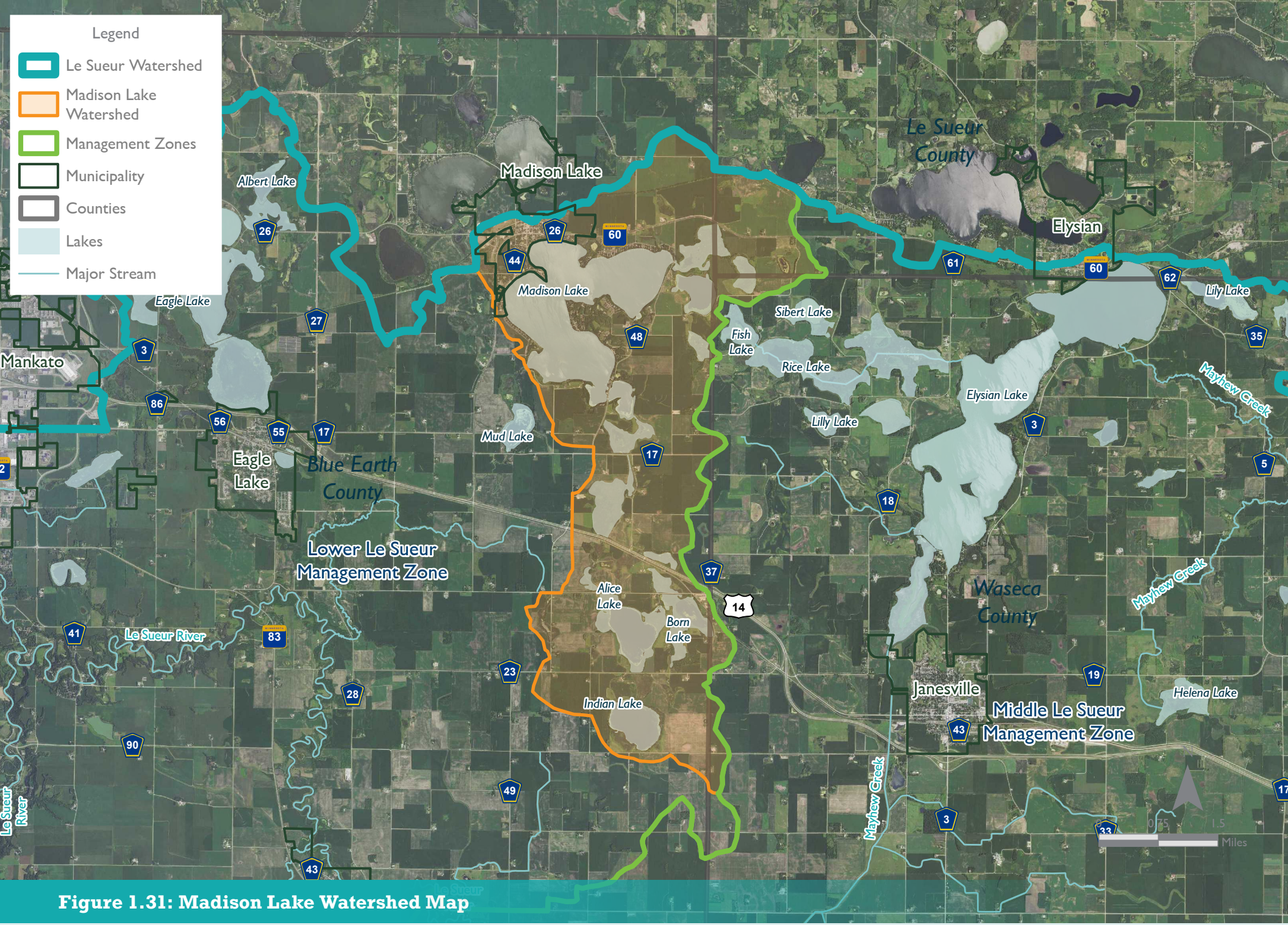


Figure 1.31: Madison Lake Watershed Map

Lura Lake

Lura Lake is a large (1,359 acres), shallow lake located southwest of Mapleton *(see Figure 1.32–1.38)*.

This lake houses an aeration system to prevent wide scale fish kills. It is home to walleye and largemouth bass and has become a popular destination for bass tournaments.

While dominated by agriculture, the subwatershed is quite small.

This lake is home to Daly Park, a county park and campground.

Lura Lake is impaired for aquatic life and recreation due to nutrients and fish bioassessments.

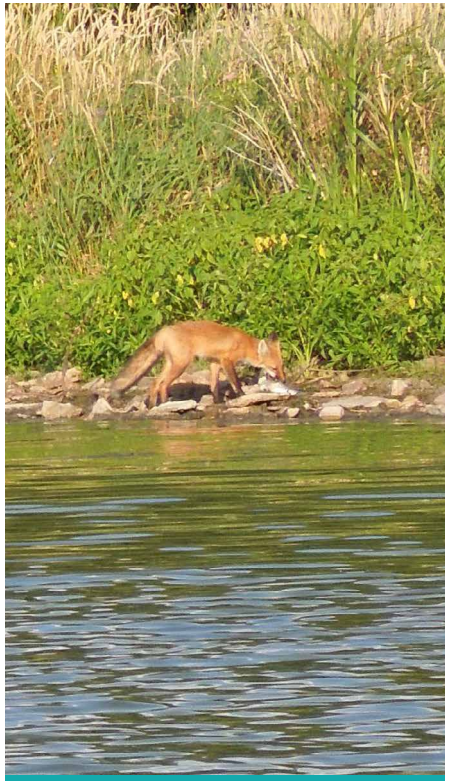


Figure 1.32: Fox (Source: BEC)

Figure 1.33: Largemouth Bass

Figure 1.34: Daly Park

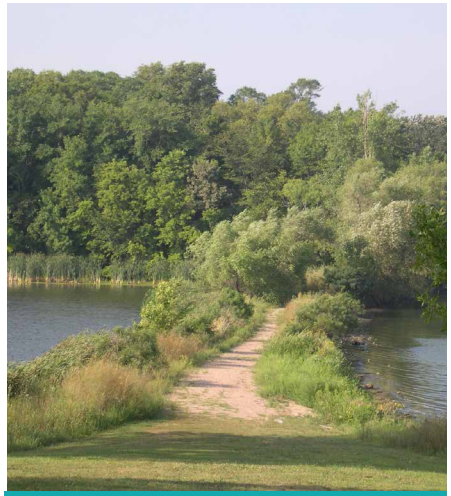


Figure 1.35: Daly Park

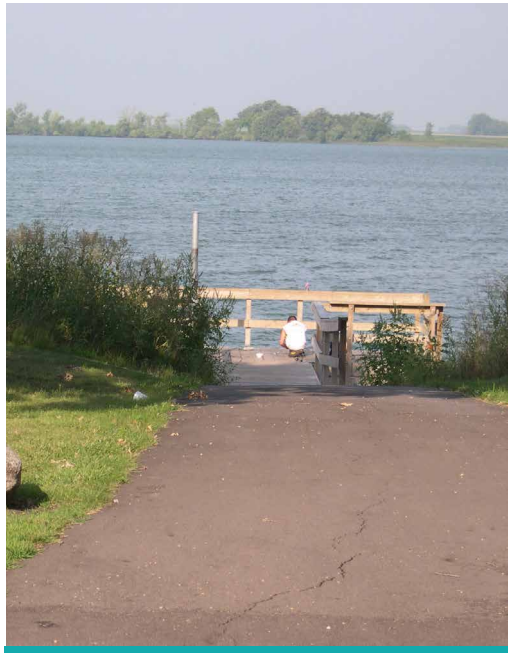


Figure 1.36: Daly Park

Figure 1.37: Daly Park (Source: BEC)

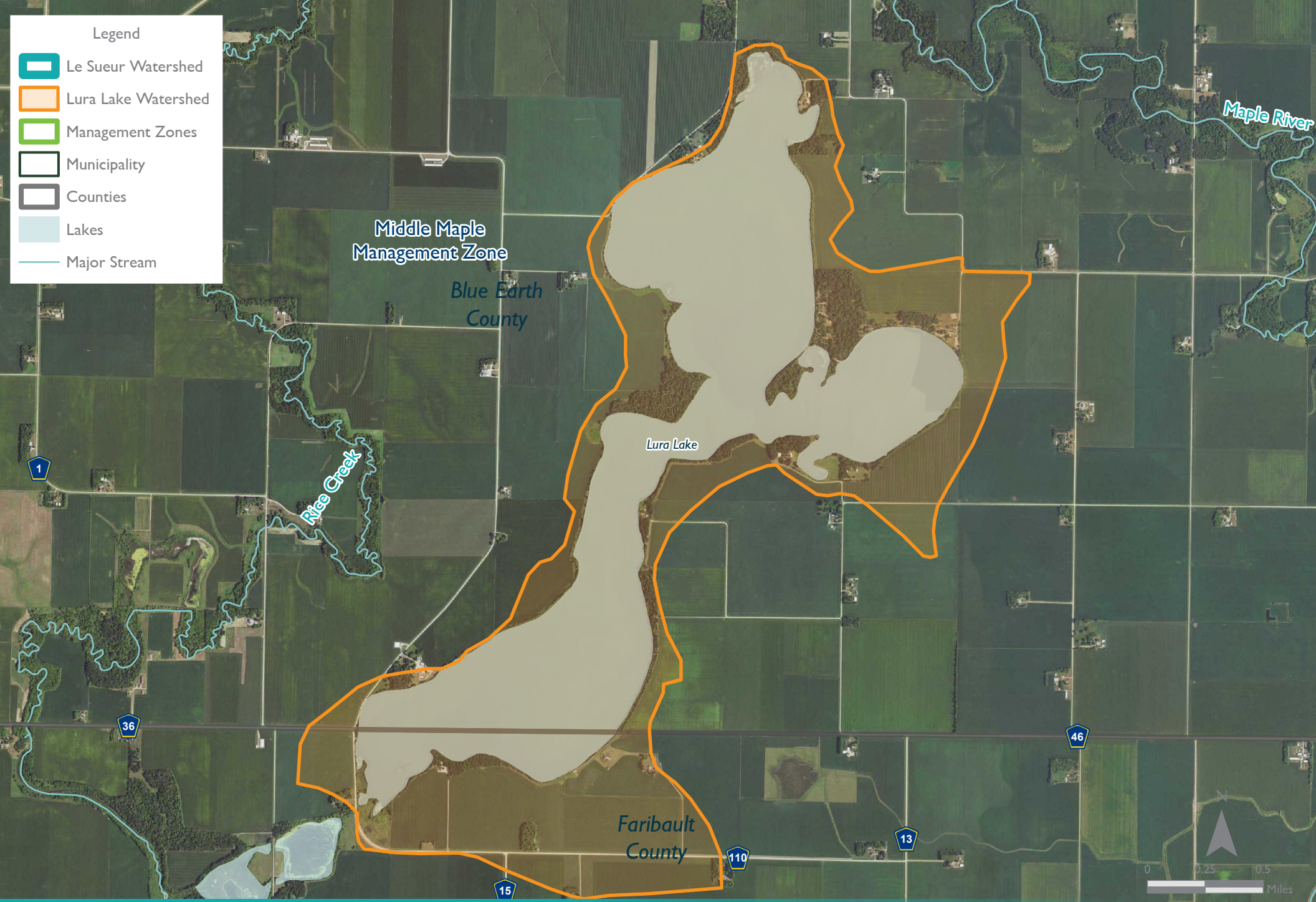


Figure 1.38: Lura Lake Watershed Map

Reeds Lake

Reeds Lake is located in Waseca County *(see Figure 1.39–1.47)* and is 195 acres in size. The lake's watershed is small relative to the surface area and has a maximum depth of 58 feet. Small watershed to surface area ratios and deep depths are characteristics that contribute to the lake's good water quality despite much of watershed land disturbance including residential development of the shoreline and agricultural lands making up much of the watershed.

Reeds Lake is found to be fully supporting aquatic recreation and aquatic life. However, recent fish community assessments found Reeds Lake to be near the impairment threshold and is vulnerable to future aquatic life impairments. Fish communities include northern pike, large mouth bass, and crappies.

Water clarity trends in Reeds Lake have been improving. Due to improving water quality trends and nearly becoming impaired for aquatic life, Reeds Lake is a prime candidate for protection in the Watershed.

Figure 1.39: Bird Watching

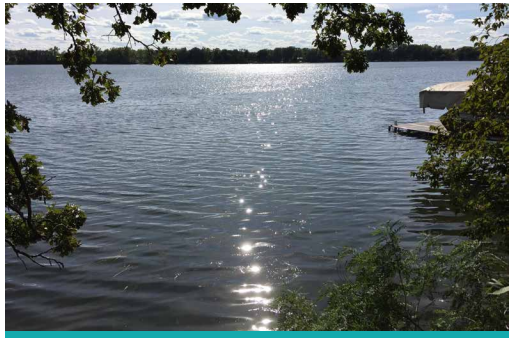


Figure 1.40: Reeds Lake

Figure 1.41: Boating

Figure 1.42: Reeds Lake

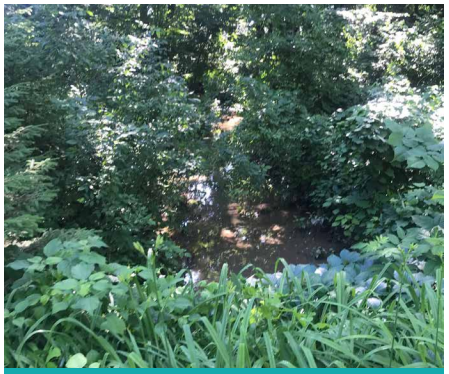


Figure 1.43: Reeds Lake

Figure 1.44: Reeds Lake

Figure 1.45: Swimming

Figure 1.46: Public Boat Access

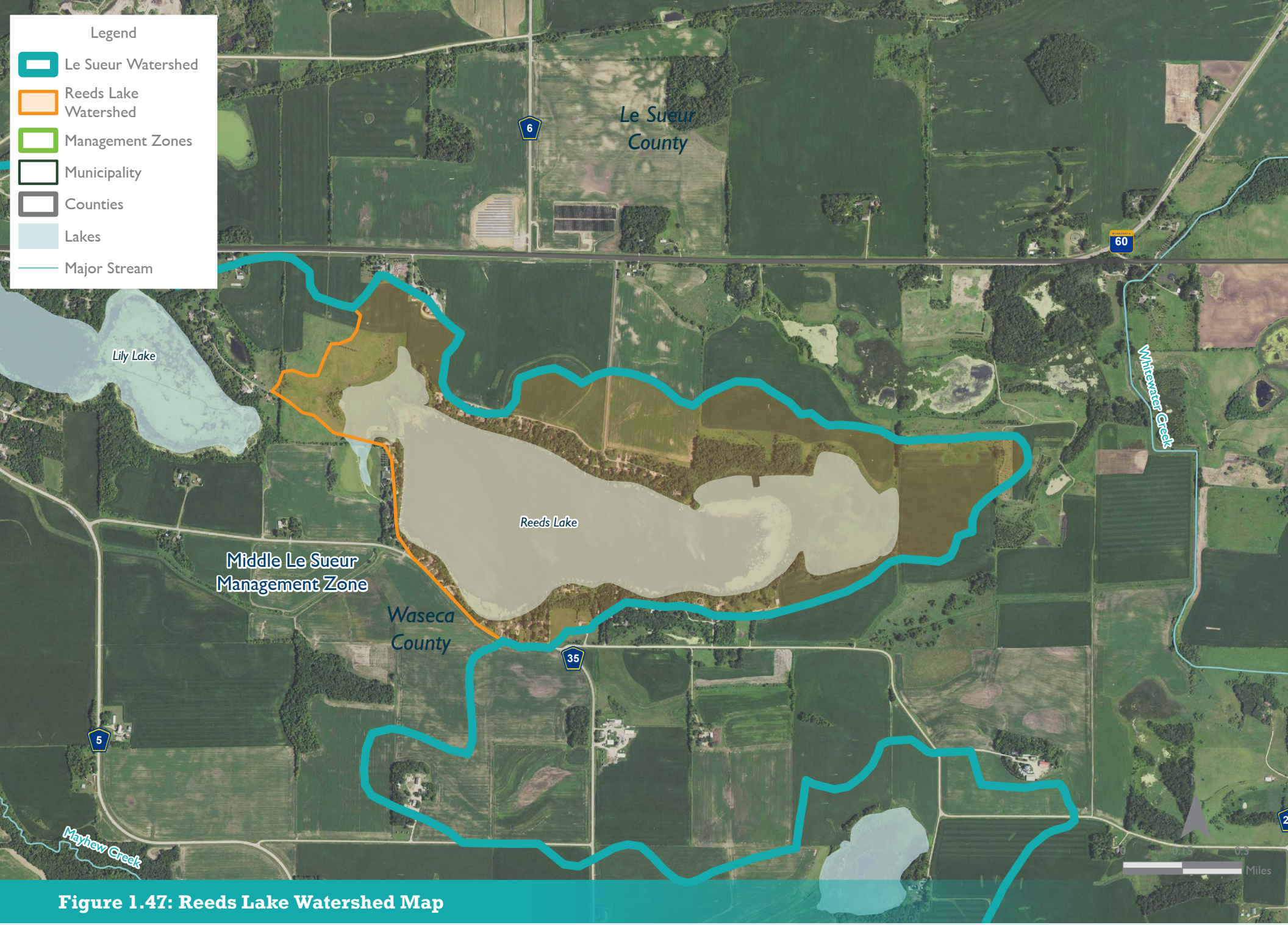


Figure 1.47: Reeds Lake Watershed Map

Figure 1.48: Impaired Streams Map

Streams

There are 1,201 stream miles within the Watershed. The Le Sueur River flows 111 miles beginning in Freeborn County, and outlets into the Blue Earth River. Tributaries include Big Cobb River, Little Cobb River, Maple River, and Rice Creek.

Currently, one stream within the Watershed was found to be supporting aquatic life—a portion of the Cobb River. Recently, three more stream reaches improved on the Cobb River to meet aquatic life standards. Improvements may be attributed to less intensive rainfall during the last monitoring period, along with conservation efforts within the Cobb River. Additional efforts should be pursued to ensure that the improvements continue and these streams are delisted. No streams meet aquatic recreation standards. Flows within the Le Sueur River have increased which influences pollutant loading and channel conditions *(MPCA Watershed Assessment and Trends Update – Le Sueur River Watershed)*. Over the last 60 years, flows have roughly doubled (MPCA, Le Sueur River WRAPS Report, 2015). This is a result of altered hydrology , climate change, increased precipitation, extreme storm events, and decreased evapotranspiration. With an increase in flow, we also see an increase in nitrogen delivered from tile and shallow groundwater, an increase of phosphorus, and an increase of suspended sediment in streams from bank erosion.

Public and private drainage systems, lakes and wetlands also feed the Le Sueur River. The Le Sueur River Watershed is extensively drained through a vast network of ditches and tile. Public drainage systems are owned and benefited by landowners, but publicly managed by drainage authorities in accordance with state drainage law. There are 119 public drainage systems covering 369,337 benefited acres. This includes 285 miles of open public ditch and 616 miles of public tile. Private drainage systems and tiles are not accounted for in these figures.

Sediment is an ongoing issue within the Watershed. Approximately 24-30% of the total suspended solids (TSS) entering the Minnesota River comes from the Le Sueur River *(An Integrated Sediment Budget for the Le Sueur River Basin, 2011)*. A vast majority of the TSS is from non-point sources, including channel sources, ravines and gullies, and uplands *(MPCA, Le Sueur River WRAPS Report, 2015)*.

Only three municipal separate storm sewer system (MS4) communities are in the planning area *(Figure 1.52)*:

- Eagle Lake
- Mankato
- Mankato Township

The MPCA has issued 13 wastewater permits that are currently active within the watershed.

Evapotranspiration
Process by which water is transferred from land to atmosphere by evaporation from soil and other surfaces and by transpiration from plants.

Did you know?
24-30% of the total suspended solids (TSS) entering the Minnesota River comes from the Le Sueur River.

1,201
Stream Miles within the Watershed

119
Public Drainage Systems within the Watershed

369,337
Acres Benefit from the Public Drainage Systems within the Watershed

285
Miles of Open Ditch within the Watershed

616
Miles of Tile within the Watershed

Table 1.2: Impaired Streams (Source: 2022 MPCA Impaired Waters List)

Water Body Name	Reach Description	Management Zone	Affected Designated Use	Pollutant or Stressor
Boot Creek	Unnamed Creek to T105 R22W S6, north line	Upper Le Sueur River	Limited Resource Value	• Escherichia coli (E. coli)
	T105 R22W S31, south line to T105 R23W S25, north line		Aquatic life	• Fish bioassessments
Bull Run Creek	20th Street to Little Cobb River	Middle Cobb River	Aquatic life	• Fish bioassessments • Total suspended solids (TSS)
			Aquatic recreation	• Escherichia coli (E. coli)
Cobb River	T107 R26W S30, west line to Le Sueur River	Middle Cobb River	Aquatic life	• Fish bioassessments
	Little Cobb River to T107 R26W S31, west line	Lower Cobb River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments • Nutrients • Turbidity
			Aquatic recreation	• Escherichia coli (E. coli)
	T104 R23W S34, south line to Little Cobb River	Upper Cobb River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments • Turbidity
Waseca County Ditch 12	T107 R23W S27, north line to Unnamed Creek	Middle Le Sueur River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments

Table 1.2: Impaired Streams (Source: 2022 MPCA Impaired Waters List) (Continued)

Water Body Name	Reach Description	Management Zone	Affected Designated Use	Pollutant or Stressor
Waseca County Ditch 15-2	Headwaters to Le Sueur River	Middle Le Sueur River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments
Waseca County Ditch 19	Headwaters to Le Sueur River	Middle Le Sueur River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments
Waseca County Ditch 20	Headwaters to Silver Lake outlet	Middle Cobb River	Aquatic life	• Fish bioassessments
Waseca County Ditch 29	Unnamed Ditch to CD 6	Middle Le Sueur River	Aquatic life	• Fish bioassessments
Faribault County Ditch 3	Unnamed Creek to CD 7	Upper Maple River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments

Table 1.2: Impaired Streams (Source: 2022 MPCA Impaired Waters List) (Continued)

Water Body Name	Reach Description	Management Zone	Affected Designated Use	Pollutant or Stressor
Faribault County Ditch 3 (Judicial Ditch 9)	JD 9 to -93.958, 43.852	Middle Maple River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments • Turbidity
			Aquatic recreation	• Escherichia coli (E. coli)
	-93.958, 43.852 to Maple River	Middle Maple River	Aquatic life	• Turbidity
			Aquatic recreation	• Escherichia coli (E. coli)
Waseca County Ditch 38	-93.594, 44.047 to Unnamed Creek	Middle Le Sueur River	Aquatic life	• Fish bioassessments
Freeborn County Ditch 46	Unnamed Ditch to Le Sueur River	Upper Le Sueur River	Aquatic life	• Benthic macroinvertebrates bioassessments
Blue Earth County Ditch 57	Unnamed Ditch to Cobb River	Middle Cobb River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments
Blue Earth County (BEC) Ditch 6	T107 R25W S14, east line to Le Sueur River	Middle Le Sueur River	Aquatic life	• Benthic macroinvertebrates bioassessments
Faribault County Ditch 70	Unnamed Creek to CD 3	Upper Maple River	Aquatic life	• Benthic macroinvertebrates bioassessments
Faribault County Ditch 85	Unnamed Creek to Maple River	Maple River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments

Table 1.2: Impaired Streams (Source: 2022 MPCA Impaired Waters List) (Continued)

Water Body Name	Reach Description	Management Zone	Affected Designated Use	Pollutant or Stressor
Faribault County Ditch 88	Unnamed Creek to -93.874, 44.085	Lower Le Sueur River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments
Iosco Creek	Silver Creek to T108 R23W S7, west line	Middle Le Sueur River	Aquatic life	• Fish bioassessments
			Aquatic recreation	• Escherichia coli (E. coli)
Waseca–Steele Counties Judicial Ditch 10	145th Street to Little Le Sueur River	Upper Le Sueur River	Aquatic life	• Fish bioassessments
Faribault–Blue Earth Counties Judicial Ditch 9	Unnamed Creek to CD 3	Middle Maple River	Aquatic life	• Benthic macroinvertebrates bioassessments

Table 1.2: Impaired Streams (Source: 2022 MPCA Impaired Waters List) (Continued)

Water Body Name	Reach Description	Management Zone	Affected Designated Use	Pollutant or Stressor
Le Sueur River	Maple River to Blue Earth River	Lower Le Sueur River	Aquatic life	• Fish bioassessments, Nutrients • Turbidity
			Aquatic recreation	• Fecal coliform
	Cobb River to Maple River	Lower Le Sueur River	Aquatic life	• Turbidity
	CD 6 to Cobb River	Lower Le Sueur River	Aquatic life	• Fish bioassessments • Turbidity
			Aquatic recreation	• Escherichia coli (E. coli)
	Boot Creek to CD 6	Upper Le Sueur River	Aquatic life	• Turbidity
	Freeborn/Steele County border to Boot Creek	Upper Le Sueur River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments • Turbidity

Table 1.2: Impaired Streams (Source: 2022 MPCA Impaired Waters List) (Continued)

Water Body Name	Reach Description	Management Zone	Affected Designated Use	Pollutant or Stressor
Little Cobb River	Bull Run Creek to Cobb River	Middle Cobb River	Aquatic life	• Dissolved oxygen • Fish bioassessments • Nutrients • Turbidity
			Aquatic recreation	• Fecal coliform
Little Cobb River (County Ditch 8)	Unnamed Ditch to Severson Lake	Middle Cobb River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments
Little Le Sueur River	T106 R22W S12, east line to Le Sueur River	Middle Cobb River	Aquatic life	• Fish bioassessments
Maple River	Rice Creek to Le Sueur River	Lower Maple River	Aquatic life	• Turbidity
			Aquatic recreation	• Fecal coliform
	Minnesota Lake outlet to Rice Creek	Middle Maple River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments • Turbidity
	Unnamed Creek to Minnesota Lake outlet	Upper Maple River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments
	Headwaters (Penny Lake 24-0048-00) to 525th Avenue	Upper Maple River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments
Providence Creek (Judicial Ditch 49)	T105 R27W S17, west line to -94.086, 43-902	Middle Maple River	Aquatic life	• Benthic macroinvertebrates bioassessments

Table 1.2: Impaired Streams (Source: 2022 MPCA Impaired Waters List) (Continued)

Water Body Name	Reach Description	Management Zone	Affected Designated Use	Pollutant or Stressor
Rice Creek	Headwaters to T103 R27W S2, north line	Middle Maple River	Aquatic life	• Turbidity
			Aquatic recreation	• Escherichia coli (E. coli)
	T104 R27W S35, south line to Maple River	Middle Maple River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments • Turbidity
			Aquatic recreation	• Escherichia coli (E. coli)
Silver Creek (County Ditch 3)	405th Avenue to Losco Creek	Middle Le Sueur River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments
Unnamed Creek	Unnamed Creek to Le Sueur River	Lower Le Sueur River	Aquatic life	• Benthic macroinvertebrates bioassessments
Unnamed Creek	Unnamed Creek to Le Sueur River	Upper Le Sueur River	Aquatic life	• Fish bioassessments
Unnamed Creek	Rice Lake to Rice Creek	Middle Maple River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments
Unnamed Creek	Unnamed Creek to Maple River	Upper Maple River	Aquatic life	• Fish bioassessments
Unnamed Creek	Unnamed Lake (Hobza Marsh 07-0019-00) to Unnamed Creek	Middle Cobb River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments

Table 1.2: Impaired Streams (Source: 2022 MPCA Impaired Waters List) (Continued)

Water Body Name	Reach Description	Management Zone	Affected Designated Use	Pollutant or Stressor
Unnamed Creek	CD 26 to Le Sueur River	Lower Le Sueur River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments
Unnamed Creek	Mud Lake (07-0034-00) to Unnamed Creek	Lower Le Sueur River	Aquatic life	• Fish bioassessments
Unnamed Creek	Eagle Lake to Unnamed Creek	Lower Le Sueur River	Aquatic life	• Benthic macroinvertebrates bioassessments
Unnamed Creek	Headwaters to Unnamed Creek	Middle Cobb River	Aquatic life	• Fish bioassessments
Unnamed Creek	Unnamed Lake to 557th Avenue	Middle Maple River	Aquatic life	• Benthic macroinvertebrates bioassessments • Fish bioassessments
Unnamed Creek	-93.934, 44.073 to Unnamed Creek	Lower Le Sueur River	Aquatic life	• Fish bioassessments
Unnamed Creek (Little Beauford Ditch)	Headwaters to Victory Drive (MN22)	Lower Cobb River	Aquatic life	• Chlorpyrifos • Turbidity
			Aquatic recreation	• Fecal coliform
	Victory Drive (MN22) to Cobb River	Lower Cobb River	Aquatic life	• Chlorpyrifos • Turbidity
			Aquatic recreation	• Fecal coliform

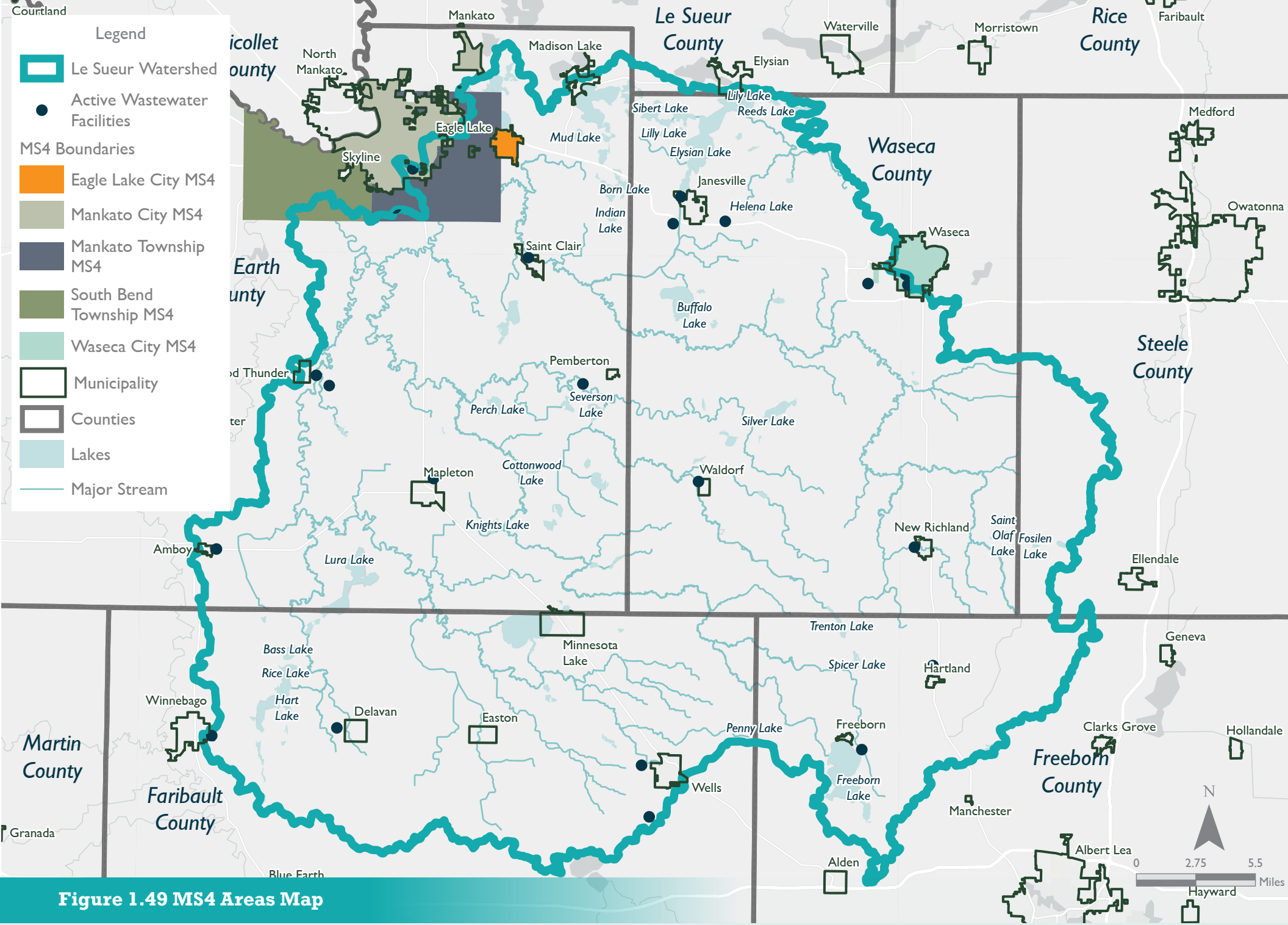


Figure 1.49 MS4 Areas Map

Groundwater Resources

Groundwater provides all the Watershed's drinking water. There have been 2,270 known private wells, and 19 community public water supplies *(MDH, Le Sueur River GRAPS Report, 2021)*. Great progress has been made with these 19 communities in starting or completing a wellhead protection plan, with only two communities remaining. In private wells, depths vary greatly, ranging from 47 to 517 feet.

There are groundwater concerns within the planning area, primarily nitrates and arsenic. Nitrates, the most common contaminant, is considered human influenced and naturally occurring. Feedlots, septic systems, fertilizers, and naturally occurring nitrates in soil can all impact nitrate levels, particularly in areas with high pollution sensitivity. Minimal high nitrate samples have been found within the area. Unlike nitrates, arsenic is widespread throughout the planning area. Arsenic, a known carcinogen, is a naturally occurring element found in rocks and soil that dissolves in water. While testing for arsenic has not been extensive in all counties of the watershed, all newly constructed wells require arsenic testing. As of August 2008, arsenic testing in new wells has been required under MN Rules 4725.5650. *Source: revisor.mn.gov/rules/4725.5650/ Information on arsenic in well water can be found here: health.state.mn.us/communities/environment/water/wells/waterquality/arsenic.html.* Manganese occurs naturally in rocks and soil across Minnesota. Children and adults who drink water with high levels of manganese for a long time may have problems with memory, attention, and motor skills. Infants may develop learning and behavior problems if they drink water with too much manganese in it.

The City of Mankato acquires a majority of its public water supply from two shallow wells that collect water from the Minnesota and Blue Earth rivers. Due to the wells' proximity to the rivers and shallow depths, the collected water is influenced by surface water quality. A Drinking Water Supply Management Area for surface water (DWSMA – SW) has been delineated for areas where non-point source pollution has the greatest potential for impacts to the public water supply and includes parts of the Le Sueur River Watershed *(Figure 1.50)*. *Source: https://www.health.state.mn.us/communities/environment/water/docs/swp/mankatoswa.pdf*

There are 28 lakes in the Watershed that are considered groundwater dependent lakes *(MDH, Le Sueur River GRAPS Report, 2021)*. These surface water and groundwater connections can be heavily influenced by one another and be a direct source of contamination to our groundwater *(Figure 1.51)*.

The Watershed has minimal karst areas, limited to central Blue Earth County and a small area in north central Faribault County. These areas have restrictions on applying fall nitrogen fertilizer due to the high sensitivity of karst. Outside of the karst areas, the Watershed area has low pollution sensitivity, according to the Minnesota Department of Health (MDH) Le Sueur River GRAPS report. According to the DNR, **karst** is a terrain with distinctive landforms and hydrology created primarily from the dissolution of soluble rocks. It is characterized by sinkholes, caves, springs, and underground drainage dominated by rapid conduit flow. *Source: dnr.state.mn.us/waters/groundwater_section/mapping/springs.html*

Did you know? Drinking water can be tested by accredited labs. Find one today!
bit.ly/mnaccreditedlabs

Nitrates
Consuming too much nitrate can affect how blood carries oxygen, and can cause blue baby syndrome.

Karst
A landscape underlain by limestone which has been eroded by dissolution, producing ridges, towers, fissures, sinkholes and other characteristic landforms.

Did you know?
Groundwater provides 100% of the Watershed's drinking water

2,270
Known Private Wells within the Watershed

19
Community Public Water Supplies within the Watershed

28
Lakes within the Watershed are Considered Groundwater Dependent Lakes

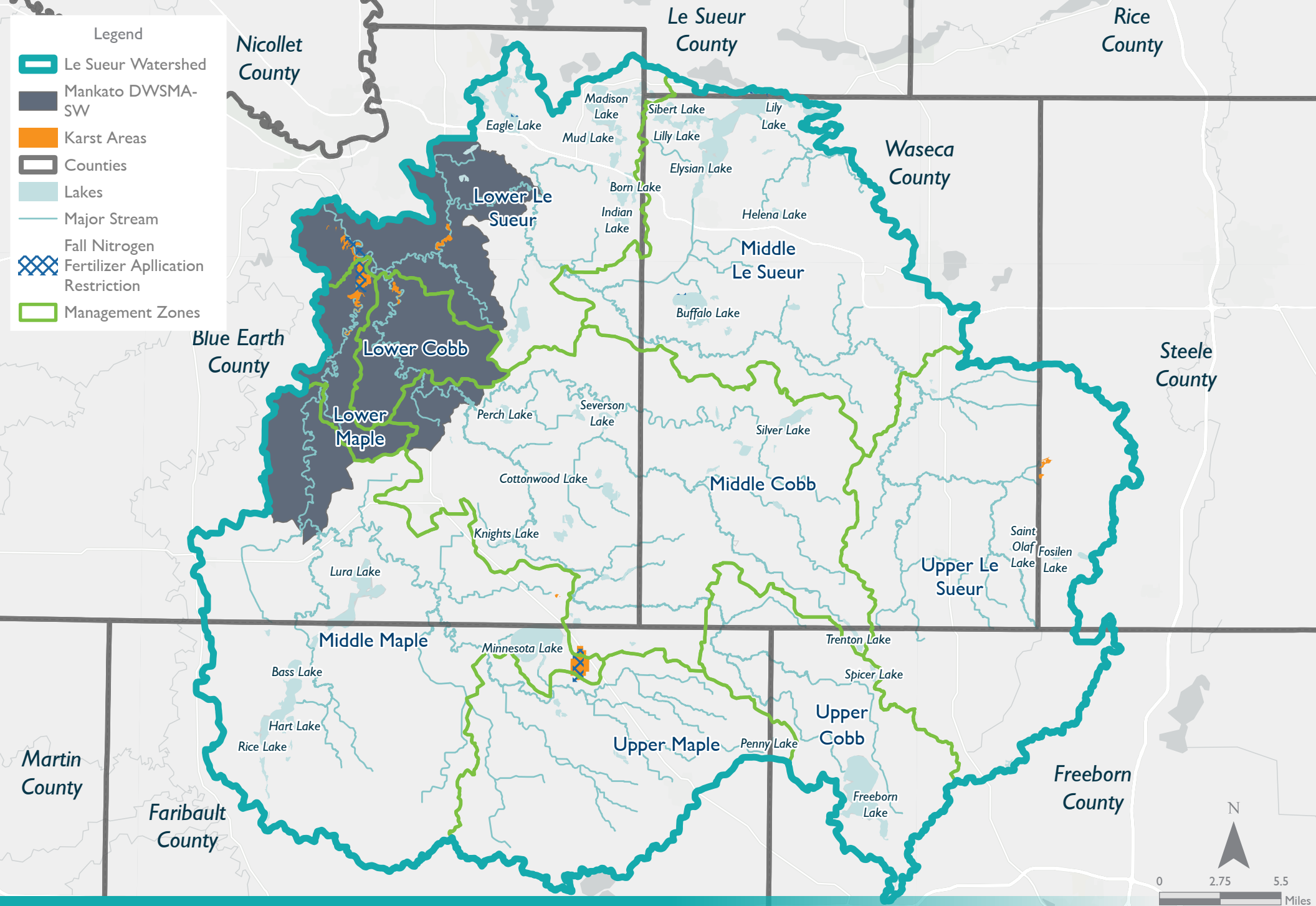


Figure 1.50 Potential Areas of Groundwater–Surface Water Connections Map

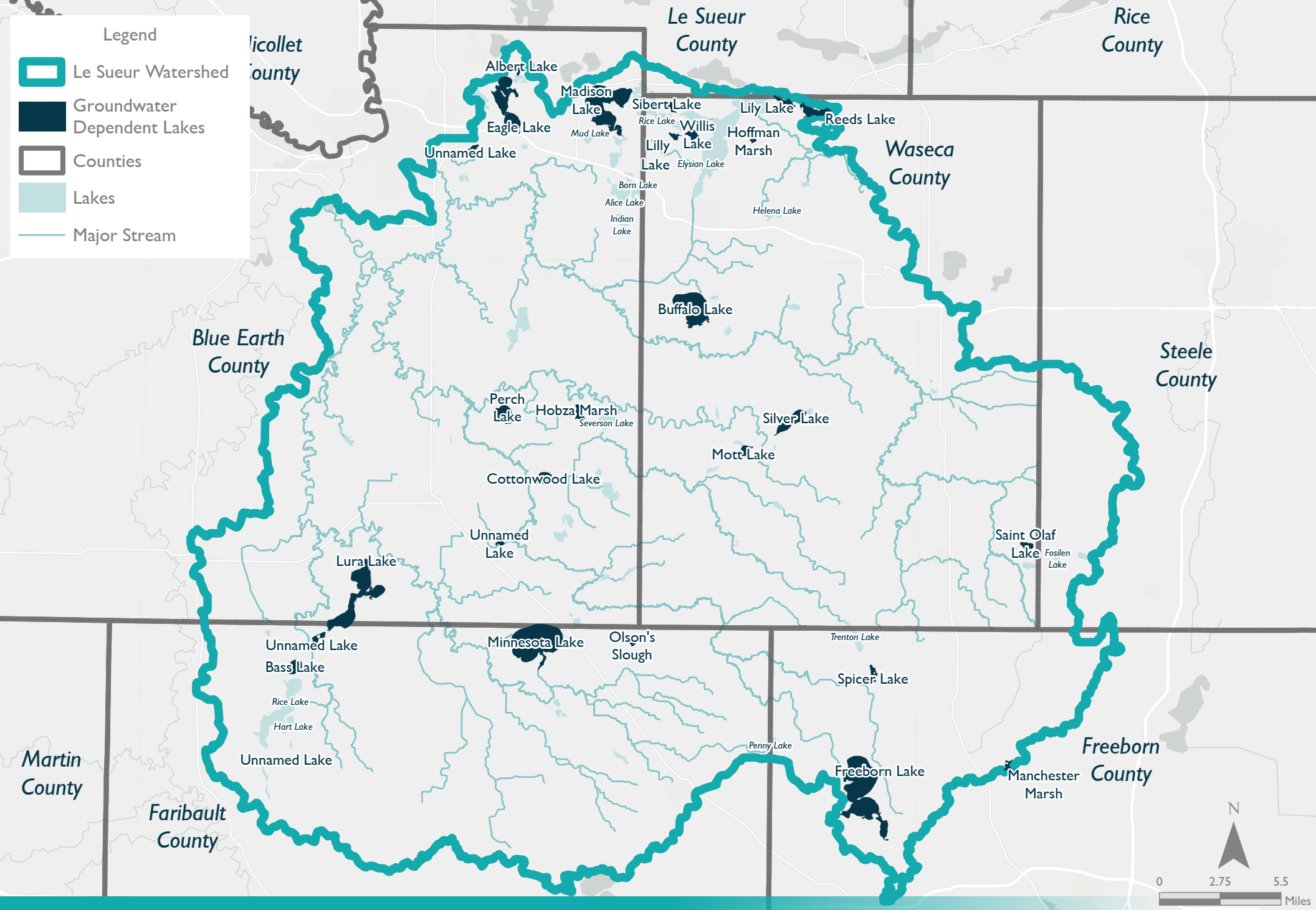


Figure 1.51: Groundwater Dependent Lakes Map

Precipitation
Rain, snow, sleet, or hail that falls to the ground.

37.7”
Average Snowfall within the Watershed

23.95”-45.39”
Range of annual precipitation within the Watershed from the last 10-years

Figure 1.52: Flooding in New Richland, MN

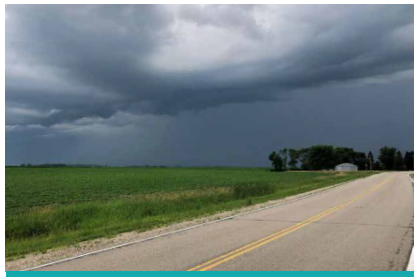


Figure 1.53: Rain event north of St. Olaf Lake

Figure 1.54: Flooding in St. Clair, MN

Precipitation and Flooding

Precipitation data in this area began being recorded in 1895 *(Figures 1.52–1.54)*.

Snowfall

Based on rain gauge records located in Wells, Minnesota, the average annual snowfall is 37.7 inches.

Rainfall

The ten-year average rainfall in the Watershed (2012-2021) was 35.61 inches. In that period, annual precipitation ranged from 23.95 inches in 2021, up to 45.39 inches in 2019 *(arcgis.dnr.state.mn.us/ewr/climatetrends/#)*.

Drought

In 2021, the area saw drought conditions, however an overall trend shows an increase in precipitation and extreme weather events.

Flooding

Flash flooding causes issues within the watershed with flooding in St. Clair and New Richland. In 2010 and 2016 the City of New Richland experienced a 100-year precipitation events which resulted in damage to public infrastructure, the public school, and local businesses. The New Richland Care Center, a skilled nursing facility that also operates the local Meals on Wheels program, was forced to evacuate.

A significant area in the City of St. Clair is mapped by FEMA as being in the 1-percent chance floodplain (100-year floodplain). While there are not homes or businesses in the mapped floodplain, flooding of the Le Sueur River has impacted dwellings, businesses and the wastewater treatment plant. The City of St. Clair constructed a levee along the Le Sueur River floodplain to protect the wastewater treatment plant and other infrastructure from flooding. St. Clair’s levee was constructed for a 100-year precipitation event following the 2010 flood. In 2016, the Le Sueur River flood waters breached the levee as the river exceeded the 100-year flood stage.

Fish and Wildlife Habitat

There are 29 state wildlife management areas (3,625 acres) and 13 federal waterfowl production areas (2,173 acres) located, at least partially, within the Watershed *(Figures 1.55–1.58)*. In addition, there are 250 acres entered into a Wetland Bank, and 10,314 acres in permanent conservation easements such as the Conservation Reserve Enhancement Program (CREP) and the Reinvest in Minnesota (RIM) program.

Read more about CREP here!
bit.ly/conservationReserveEnhancementProgram

Read more about RIM here!
bit.ly/reinvestInMN

Madison and St. Olaf lakes are part of the DNR Sentinel Lakes Program, which is a long-term lake ecosystem monitoring program, created to detect and understand the physical, chemical, and biological changes occurring in Minnesota's lakes.

Additionally, there are important lakes and public water basins, specifically in the northeastern portion of the watershed. Many of the public water basins are shallow in nature but provide significant habitat value.

Read more about Sentinel Lakes here!
dnr.state.mn.us/fisheries/slice/index.html

There are over 5,500 acres of native plant communities with 80% having a moderate ranking for **biodiversity**. The ranking signifies the level of disturbance and the occurrences of rare species. A moderate site within the watershed is one that has occurrences of rare species with moderate disturbances. These sites have strong potential for recovery.

Figure 1.55 Mallard Duck

Figure 1.56: Pheasant

Figure 1.57: White-Tailed Deer Fawn

Biodiversity
The variety of life in the world or in a particular habitat or ecosystem.

Did you know?
There are over 5,500 acres of native plant communities with 80% having a moderate ranking for biodiversity.

29
State Wildlife Management Areas within the Watershed

13
Waterfowl Protection Areas within the Watershed

10,314
Acres in Permanent Conservation Easements within the Watershed

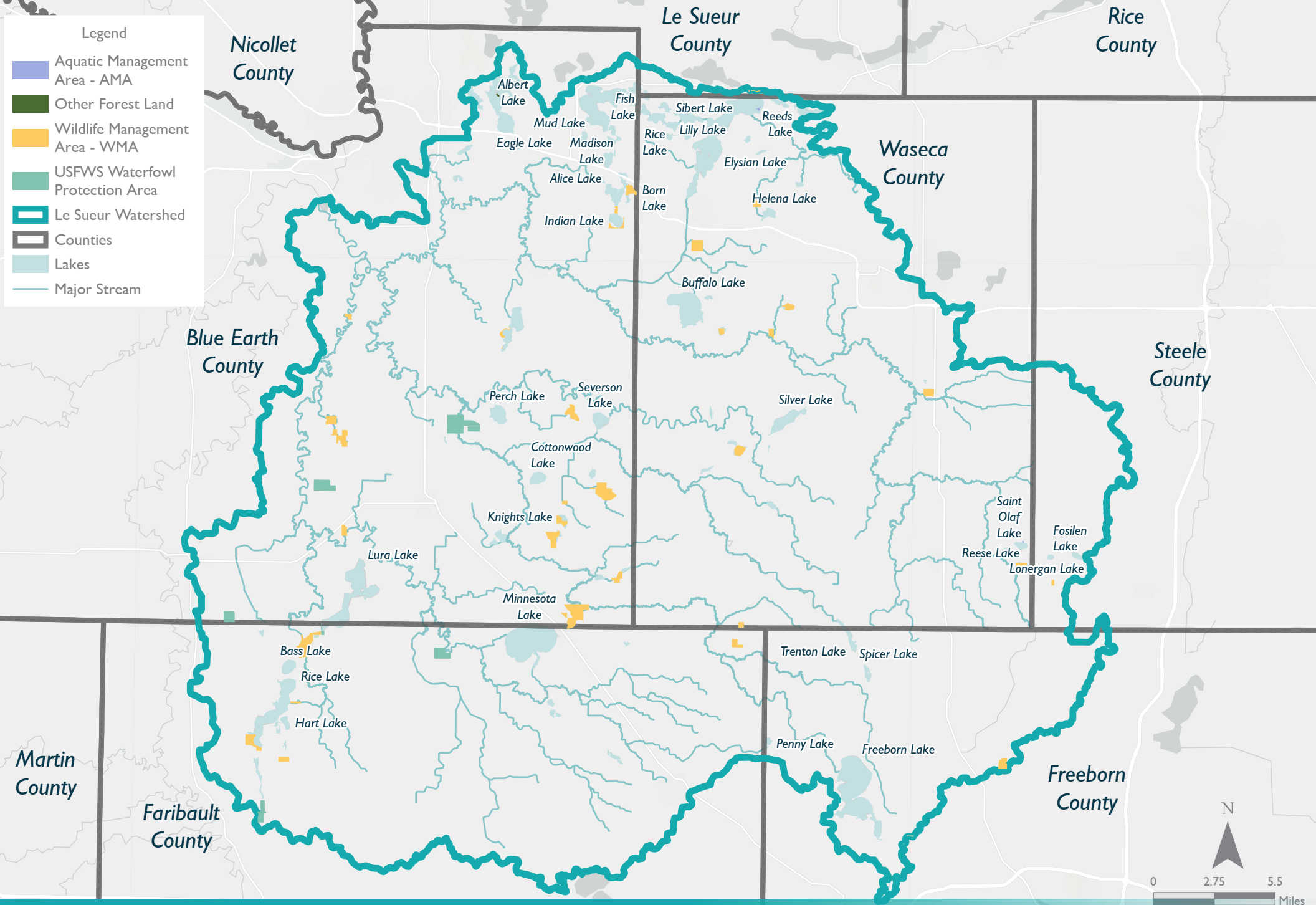


Figure 1.58: State Wildlife Management and Waterfowl Protection Areas

Rare and Endangered Species

Minnesota Statute 84.0895 governs the protection of threatened species and endangered species *(Table 1.3)*. Species are also protected at the federal level and their status is determined by the U.S. Fish and Wildlife Service (USFWS).

Table 1.3: Rare and Endangered Species (DNR, 2022) (USFWS, 2022)

Group	Scientific Name	Common Name	State Status		Federal Status	
			Endangered	Threatened	Endangered	Threatened
Caddisfly	Limnephilus secludens	A Caddisfly	✕			
Mussel	Arcidens confragosus	Rock Pocketbook	✕			
Mussel	Lampsilis teres	Yellow Sandshell	✕			
Mussel	Simpsonaias ambigua	Salamander Mussel	✕			
Mussel	Tritogonia verrucosa	Pistolgrip	✕			
Bird	Athene cunicularia	Burrowing Owl	✕			
Bird	Lanius ludovicianus	Loggerhead Shrike	✕			
Caddisfly	Oecetis ditissa	A Caddisfly		✕		
Mussel	Actinonaias ligamentina	Mucket		✕		
Mussel	Alasmidonta marginata	Elktoe		✕		
Mussel	Eurynia dilatata	Spike		✕		
Mussel	Lasmigona costata	Fluted-shell		✕		
Mussel	Quadrula nodulata	Wartyback		✕		
Mussel	Theliderma metanevra	Monkeyface		✕		
Mussel	Venustaconcha ellipsiformis	Ellipse		✕		
Fish	Notropis anogenus	Pugnose Shiner		✕		
Fish	Polyodon spathula	Paddlefish		✕		
Mammal	Spilogale putorius	Eastern Spotted Skunk		✕		
Turtle	Emydoidea blandingii	Blanding's Turtle		✕		
Plant	Arnoglossum plantagineum	Tuberous Indian-plantain		✕		
Plant	Asclepias sullivantii	Sullivant's Milkweed		✕		
Plant	Valeriana edulis var. ciliata	Valerian		✕		
Insect	Bombus affinis	Rusty Patched Bumble Bee			✕	
Plant	Erythronium propullans	Minnesota Dwarf Lily			✕	
Mammal	Myotis sepentrionalis	Northern Long-Eared bat				✕
Plant	Plantanthera praeclara	Western Prairie Fringed Orchid				✕
Plant	Lespedeza leptostachya	Prairie bush-clover				✕

Did you know?
Agriculture covers approximately 83% of the Watershed with an additional 4% consisting of grass, pasture, and hay ground.

Land Use

Land use in the Watershed is mainly agriculture, covering approximately 83% of the area with an additional 4% consisting of grass, pasture, and hay ground *(Figure 1.60-1.61)*. This is consistent with most of southern Minnesota. With approximately 1,800 farms in the area, the typical crops are corn and soybeans with 93% of cropland being on a two-year crop rotation *(USDA, Rapid Watershed Assessment: Le Sueur)*. Small grains, hay, and grassland/pasture make up the remaining 7% of agricultural land use. Residential and commercial development make up 6.5% of land use, with wetlands and open water making up the rest. Nearly 97% of the land within the watershed is privately owned. There are approximately 780 registered feedlots located within the Watershed. All counties within the planning area are delegated to administer the Minnesota Pollution Control Agency (MPCA) Feedlot Program *(Figures 1.62)*.

There are minimal impervious surfaces in the planning area, with most of the communities being relatively small. The largest urban areas are the cities of Mankato, Eagle Lake, and Wells. Only 13% of Mankato, approximately 1,600 acres, is located within the Watershed, however the fastest growing areas of Mankato are in the Le Sueur River Watershed. In the planning period, significant growth of residential and commercial land uses are expected in the southern and eastern portion of Mankato in the Le Sueur River Watershed. Outside of Mankato, land use is not expected to greatly change in the future with most of the landscape being used for agriculture and a population projected to remain relatively stable.

~1,800
Farms within the Watershed

93%
of Cropland within the Watershed is on a Two-Year Crop Rotation

6.5%
of Land within the Watershed is Residential and Commercial

97%
of Land within the Watershed is Privately Owned

83%
of Land within the Watershed is used for agriculture

780
Registered Feedlots within the Watershed

Soil Erosion

Soil erosion is a widespread issue throughout all agricultural areas in the Watershed. Within the shoreland, ravine, and bluff areas, erosion greatly impacts public waters *(see Figure 1.59)*. The lower reaches of the Le Sueur, Maple, and Cobb Rivers are shown to be the greatest sources of sediment within the watershed.

Over time, the transformation of farmland has changed the landscape and created a change in the erosion rates. Historically, there were more diverse cropping rotations integrated with cattle grazing due to a need for much more pasture ground. Now, there are less diverse cropping rotations, much less cattle, and many forestlands and pastures are being converted to agriculture landscapes.

Figure 1.59: Soil Erosion

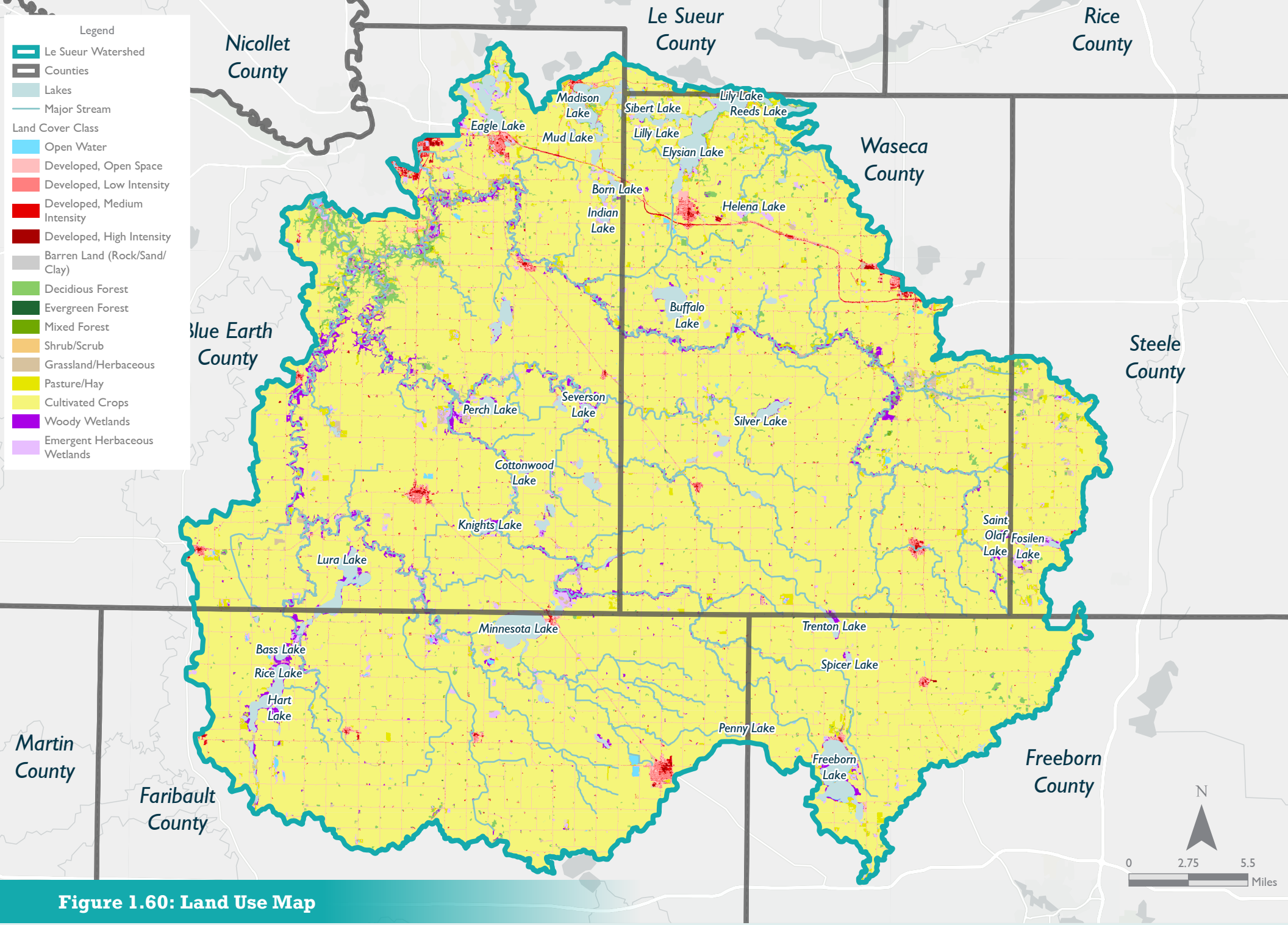


Figure 1.60: Land Use Map

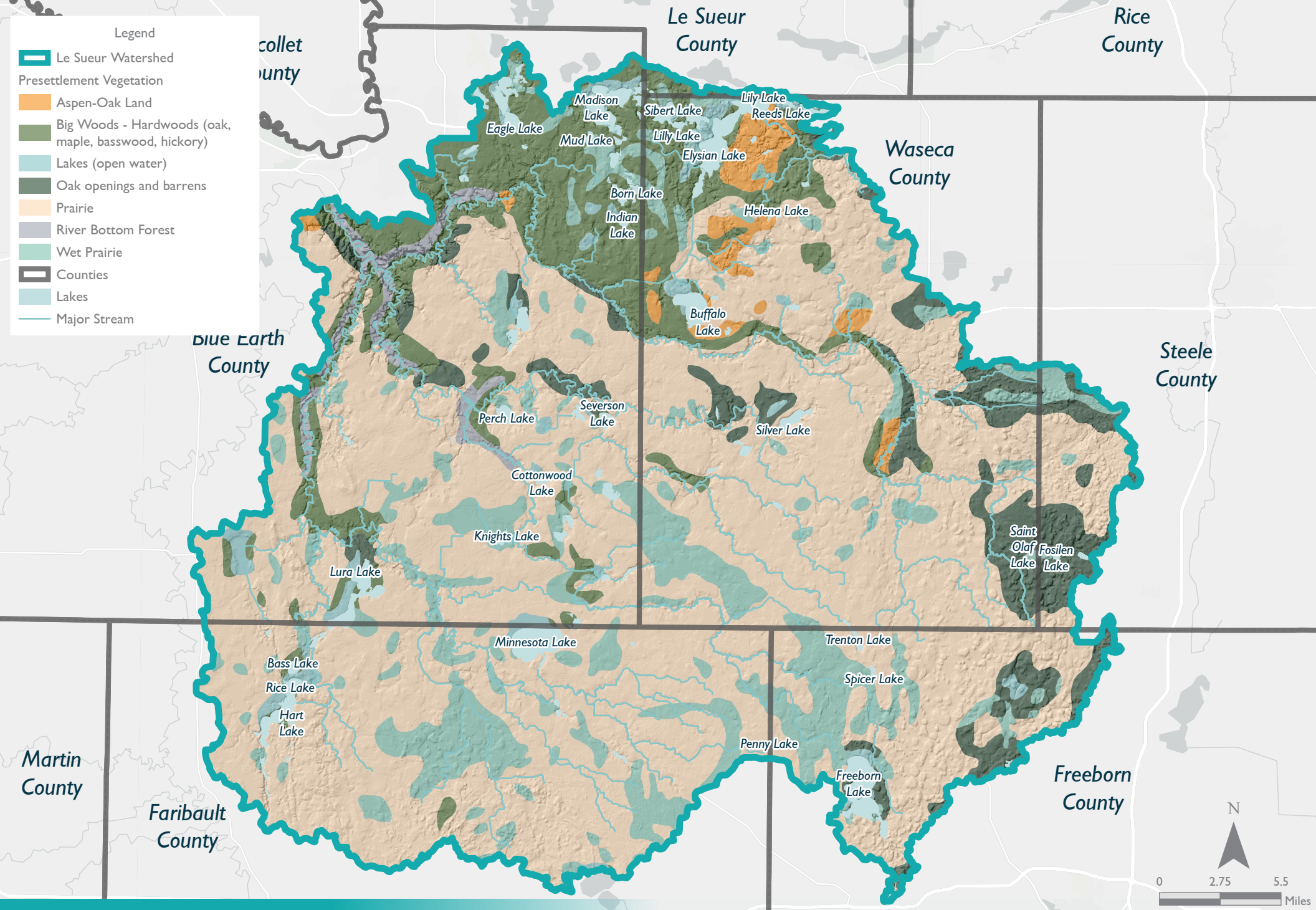


Figure 1.61: Historic Land Use Map

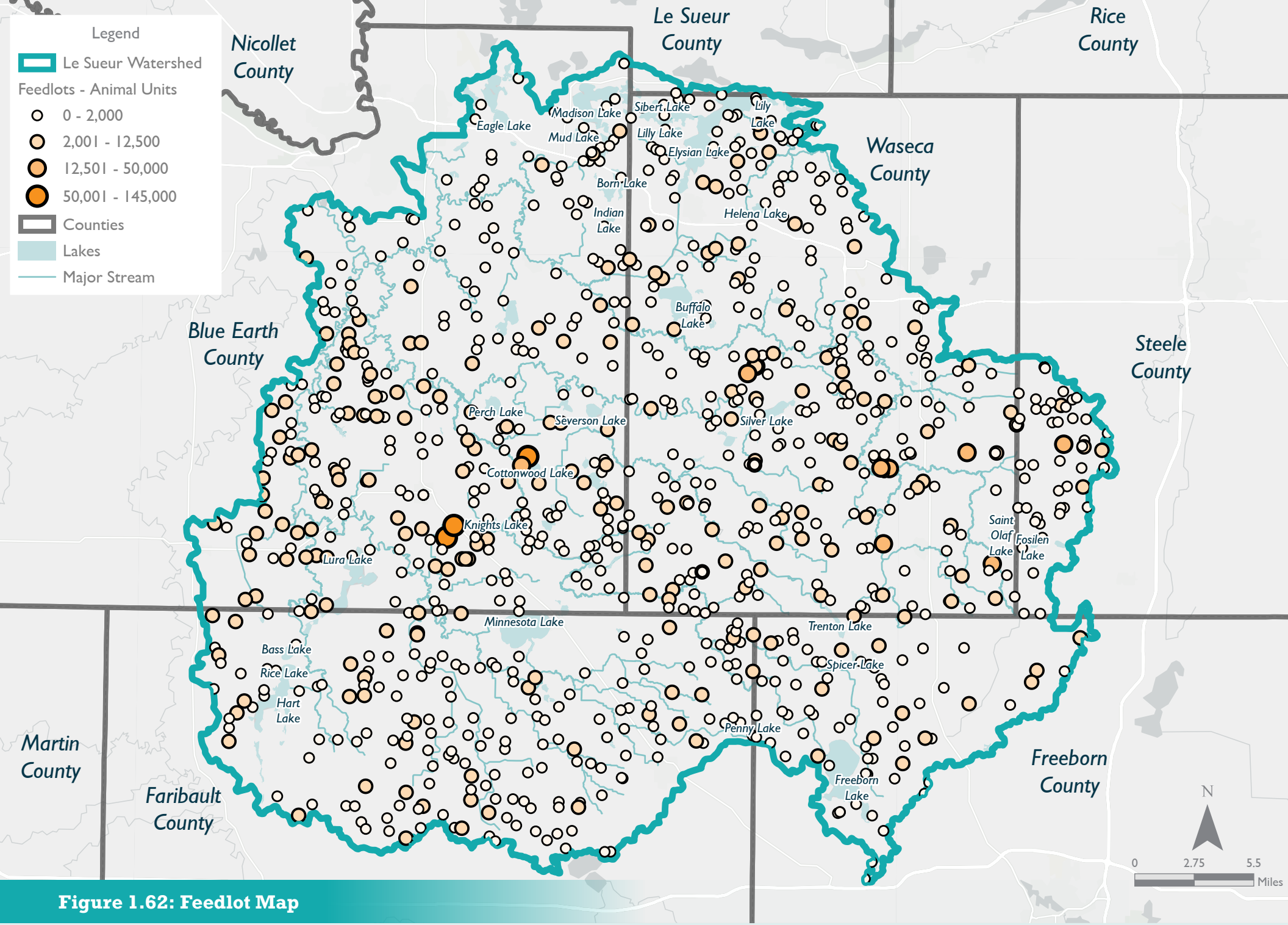


Figure 1.62: Feedlot Map

34,000
People Reside within the Watershed

$53,000-$57,500
Average Household Income within the Watershed

~1,800
Farms within the Watershed

Socio-Economics

Cities within the Le Sueur River Watershed include:

- Amboy
- Beauford
- Delavan
- Eagle Lake
- Easton
- Freeborn
- Good Thunder
- Hartland
- Janesville
- Mapleton
- Minnesota Lake
- New Richland
- Pemberton
- St. Clair
- Waldorf
- Wells
- Portions of:
  - Elysian
  - Madison Lake
  - Southeast Mankato
  - Waseca

Population

The 2020 census shows populations in most of these cities are small with an overall population being approximately 34,000 people. The area between Mankato and Eagle Lake is developing quickly. While the population in areas not related to Mankato is slightly shrinking, the overall population is slightly growing due to Mankato and Eagle Lake.

Income

Median household income in these counties range from $53,000 in Faribault County to $57,500 in Blue Earth County with Waseca and Freeborn counties in the middle.

Economy

Agriculture has a strong influence on the economy within the watershed, with approximately 1,800 farms in operation.

02

ISSUE PRIORITIZATION

02

Did you know?

Priority issues and resources were determined using a systematic vetting process.

ISSUE PRIORITIZATION

Introduction

This section covers:

- Information and data used
- Process applied
- Results of identifying priority issues

The specific process to identify priority resources is outlined in *Section 3*, according to each issue statement. In addition to stakeholder identified priority issues and concerns, existing data and studies were used to the extent possible to create an understanding of the context of resource conditions.

With this understanding, priority issues and resources were determined using a systematic vetting process. First, defined criteria were established and then recommendations were developed by the Steering Team by applying the criteria to the issue or resource category. Recommendations were reviewed by the Technical Advisory Committee at key points throughout the prioritization process to provide further refinement of the Steering Team's recommendations to the Policy Committee.

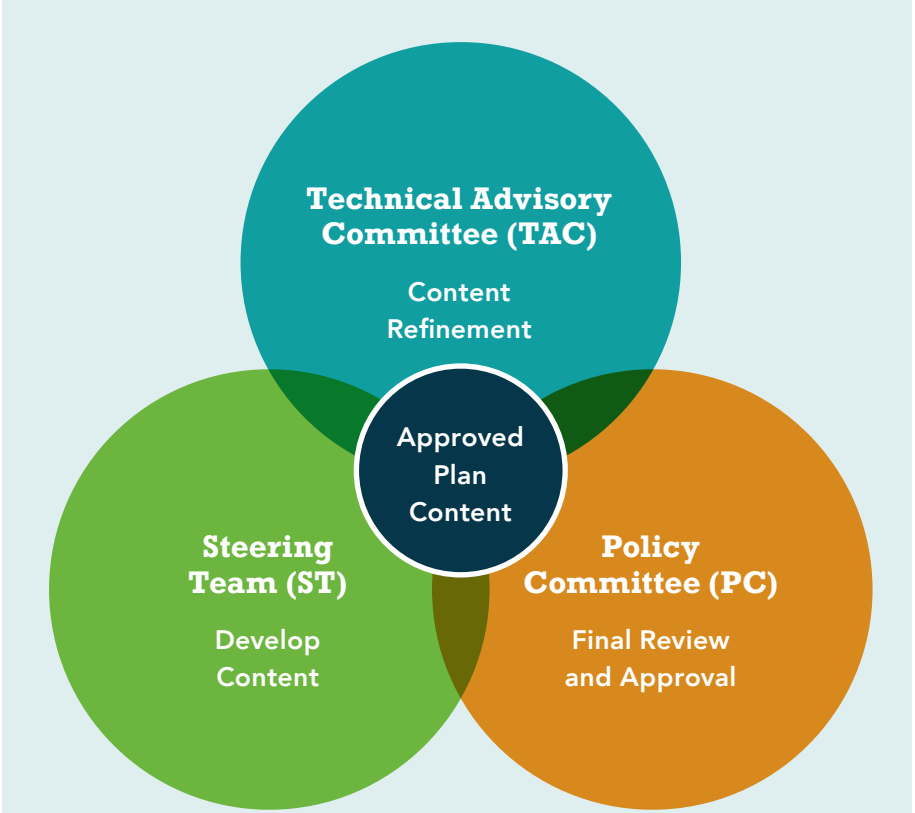


Figure 2.1: Committees Responsible for Issue Prioritization Process

Le Sueur River WRAPS Report

pca.state.mn.us/sites/default/files/wq-ws4-10a.pdf

Le Sueur Watershed Monitoring and Assessment Report

pca.state.mn.us/sites/default/files/wq-ws3-07020011b.pdf

Issue Prioritization Process

Multiple sources of information were used to compile and evaluate a list of potential values, concerns, and strategies for prioritization of issues in the Le Sueur River Watershed. Sources include related documents and reports, as well as comment letters from local stakeholders and notes from the public kickoff meeting.

Documents and Reports

The Watershed has been the focus of numerous studies, resulting in extensive research and data available. Of the available information, documents reviewed for the planning and prioritization process include, but are not limited to:

- Le Sueur River Watershed Restoration and Protection Strategies (WRAPS) Report *(MPCA, 2015)*
- Le Sueur River Watershed Monitoring and Assessment Reports *(MPCA, 2010; MPCA, 2012)*
- Le Sueur River Watershed Stressor Identification Reports *(MPCA 2014, DNR 2021)*
- Le Sueur River Watershed Total Maximum Daily Load (TMDL) Report *(MPCA, 2015)*
- Le Sueur River Groundwater Restoration and Protection Strategies (GRAPS) Report *(MDH, 2021)*
- An Integrated Sediment Budget for the Le Sueur River Basin *(Gran et al, 2011)*
- Simulation Model for Collaborative Decision Making on Sediment Source Reduction in an Intensively Managed Watershed *(Cho et al, 2019)*
- County and SWCD Water Plans
- Feasibility Studies
- Subwatershed Assessments

Public Kickoff Meeting

The public kickoff meeting was held on September 16, 2021, at the St. Olaf Lake Park in New Richland, Minnesota with approximately 60 attendees. The meeting was planned and hosted by the Water Resources Center (WRC) of Minnesota State University, Mankato *(Figures 2.2-2.3)*. The primary purpose of the public kickoff meeting was to provide an opportunity for the public and interested stakeholders to share their insight and guidance on water resource issues of concern and importance. Much of the in-person meeting consisted of small group discussions focused on the questions listed to the right.

Due to lingering impacts from the COVID-19 pandemic, the public and stakeholders were also provided an online survey option to participate in the process.

The WRC compiled information collected during the in-person kickoff meeting and the information gathered through the online survey. A summary report of the information was provided to the local governmental units (LGUs) for use in the planning process. The information below outlines a summary of the findings from the kickoff meeting as provided by WRC in the Public Input Summary (WRC, 2021a). A copy of the full Public Input Summary is in *Appendix F*.

Figure 2.2: Public Kickoff Meeting

Figure 2.3: Public Kickoff Meeting

Small Group Discussion Questions

What do you value and care about when it comes to your community and the natural environment? What would you like to preserve for future generations?

What concerns do you have about area natural resources and the community?

Are there specific watershed areas or water bodies (lakes, rivers, wetlands) that you are concerned about?

What strategies would you suggest to improve watershed health and community vitality?

Value 1

What do you value and care about when it comes to water resources and the natural environment in the Le Sueur River Watershed?

What would you like to be preserved for future generations?

Participants talked most about the importance of preserving the natural ecosystem and the natural environment of the Watershed.

They expressed an interest in maintaining good recreational opportunities to fish, hunt, and paddle while stressing the importance of access and healthy wildlife populations.

Preserving natural areas, feeling "in the wild," and maintaining a healthy landscape were all stressed.

Water quality was another central focus, participants discussed the desire for cleaner water, decreasing sediment and nutrient pollution. Residents were particularly concerned about elevated sediment levels and not sending excessive sediment downstream.

Numerous participants noted the importance of preserving agricultural lands and finding a balance between agricultural production and natural areas.

Healthy drinking water and groundwater were also discussed.

Concerns 2

What concerns do you have about area water and natural resources in the Le Sueur River Watershed today?

What issues related to rivers, lakes, or groundwater do you think should be addressed and prioritized?

What are your top two or three concerns?

Flooding and increasing peak flows were one of the central concerns discussed. Many participants expressed concerns about how to manage flooding and erosion while discussing how to slow flows and store water.

"Higher peak flows are causing more streambank, ravine, and bluff erosion..."

"We need to store water."

Water quality was another major topic of discussion, particularly elevated sediment and nutrient (phosphorus and nitrate) levels, septic systems, and bacteria.

Participants were also interested in better understanding human health impacts with questions such as, "Can you swim and fish safely?" and "Which waters are impaired?"

"Which waters are impaired?"

"Can you swim and fish safely?"

Participants noted that the farm economy is essential to the Le Sueur watershed and expressed concern about land use and development that impacts natural resources and habitat loss, noting riparian areas in particular.

Many groups discussed concerns related to management such as BMP funding, government coordination, effective communication, paperwork duties, and proper management implementation.

Groups also discussed fear of future regulation and conflicting values.

Watershed Strategies 3

What strategies do you think will help to improve watershed conditions? Examples include: Water management on agricultural or urban lands, riparian areas, lakeshore management, conservation cover, wetlands, groundwater protection, soil health, etc.

Watershed strategies focused on water storage, soil health, and lakeshore management.

The need for soil health practices, reducing tillage, increasing cover crop adoption, was widely discussed as well as the benefits of integrating grazing.

Also, many group conversations centered on water storage strategies that included wetland restoration, finding historic lake basins to restore, as well as connecting water storage, drainage, and tiling.

Others talked about the need for increasing perennialization and providing "incentives for permanent cover."

Improved lakeshore management and effective filtering of incoming tile lines were also discussed as well as maintaining buffers and installing terraces.

Finally, concern about groundwater and septic updates and maintenance was also raised.

"We need water storage in drainage districts. Look at the systems and incorporate water storage in all drainage projects."

"We need water storage through soil health."

Watershed Areas 4

Are there specific watershed areas or water bodies (lakes, rivers, wetlands) that you are concerned about?

Watershed areas discussion centered on lakes, including:

- Madison Lake
- Bass Lake
- Elysian Lake
- Freeborn Lake
- Rice Lake
- Loon Lake
- St. Olaf Lake
- Alice Lake
- Clear Lake
- Reeds Lake
- Lura Lake

Participants noted that the entire Watershed needs further attention.

Others discussed focusing work in specific subwatersheds:

- Bull Run
- Iosco Creek
- Rice Creek
- Cobb River
- Indian Creek

Targeting discussions included areas that are experiencing flooding or where there is bluff failure.

Participants also talked about opportunity areas for water storage, such as drained or altered wetlands, lower production or marginal crop lands, and increased usage of cover crops and soil health practices.

Some participants advised focusing on DNR stream stability sites and on lakes and streams that are considered nearly/barely impaired by the MPCA.

Coordination Strategies

5

What research, coordination, funding and policy strategies do you think will help to improve watershed conditions? Examples include: data collection, monitoring, coordination and collaboration, technical assistance, local, state or federal policies, conservation programs, funding etc.

Participants discussed the need for more education and outreach to increase communication about watershed issues and "to have the public care about resources."

Groups also talked about targeting agricultural groups and K-12 students. Demonstrations, self-guided tours, and online data were effective engagement routes to consider.

Discussions centered around the need for policies and programs to support watershed health and water storage in particular. They suggested working at both the state and federal level, noting the need for political pressure.

Citizens talked about the need for improved coordination, collaboration, and cooperation as well as needing continuity for a sustained effort *(Figures 2.4-2.6)*.

Research needs were also discussed. Numerous participants noted that we should first look at existing research, particularly the Collaborative for Sediment Source Reduction (CSSR).

Pay close attention to the findings of CSSR project and (University of Minnesota) Professor Dave Mulla's work. The CSSR project developed a spreadsheet quantifying flow reductions to water storage and land use practices.

We need to figure out how to reach a larger group of people.

Read more about the CSSR findings here!
bit.ly/cssr_summaryoffindings

Finally, additional funding for research and monitoring and data collection should be emphasized, as well as following up to explain research findings.

Figure 2.4: Participants

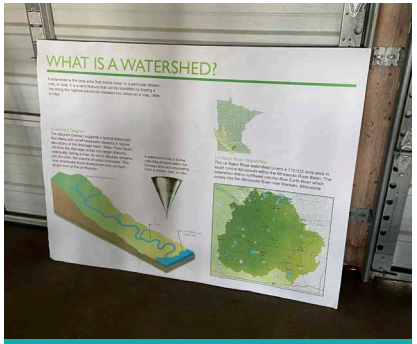


Figure 2.5: Engagement Maps

Figure 2.6: Educational Tools

Public Survey

The online survey was conducted by the WRC. The survey was available before, during, and after the public kickoff meeting as an alternative means of participation for citizens and stakeholders. Of the 68 survey respondents, most were from Blue Earth and Waseca counties, primarily rural and agricultural residents. The survey centered on gaining input about the themes outlined to the right.

The online survey was developed by the Partnership and the WRC to gain citizen input about watershed issues and priority resources. The online survey questions were the same as the questions presented to participants in the kickoff meeting to ensure that data could be compiled and aggregated between the two participation platforms. The survey included 17 open and closed-ended questions.

The Partnership and the WRC developed a database of citizens and stakeholders to notify of the in-person kickoff meeting and the online survey. The list allowed for distribution of information through 312 fliers and 461 emails that reached a diverse representation of watershed residents. The Partnership also utilized their personal connections with landowners, along with their office social media accounts, to advertise the in-person kickoff meeting and corresponding online survey.

Below are word cloud summaries and rankings of concerns and strategies from survey responses related to water resources and the natural environment as provided by WRC in the Public Survey Summary (WRC, 2021b) *(Figures 2.7-2.10)*. A copy of the full Public Survey Summary is in *Appendix F*.

Figure 2.7:
Values Word Cloud Summary Graphic

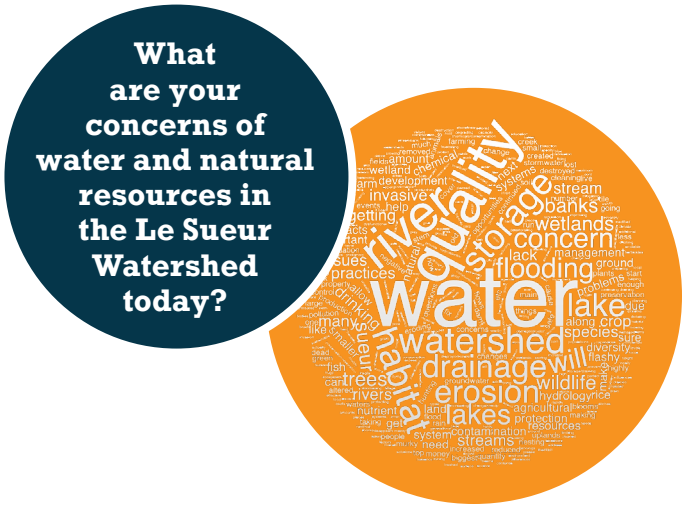


Figure 2.8:
Concerns Word Cloud Summary Graphic

Public Survey Questions

What do you value and care about when it comes to your community and the natural environment?

What would you like to preserve for future generations?

What concerns do you have about area natural resources and community?

What strategies would you suggest to improve watershed health and community vitality?

68
Survey respondents

17
Open and closed-ended questions

312
Fliers

461
Emails

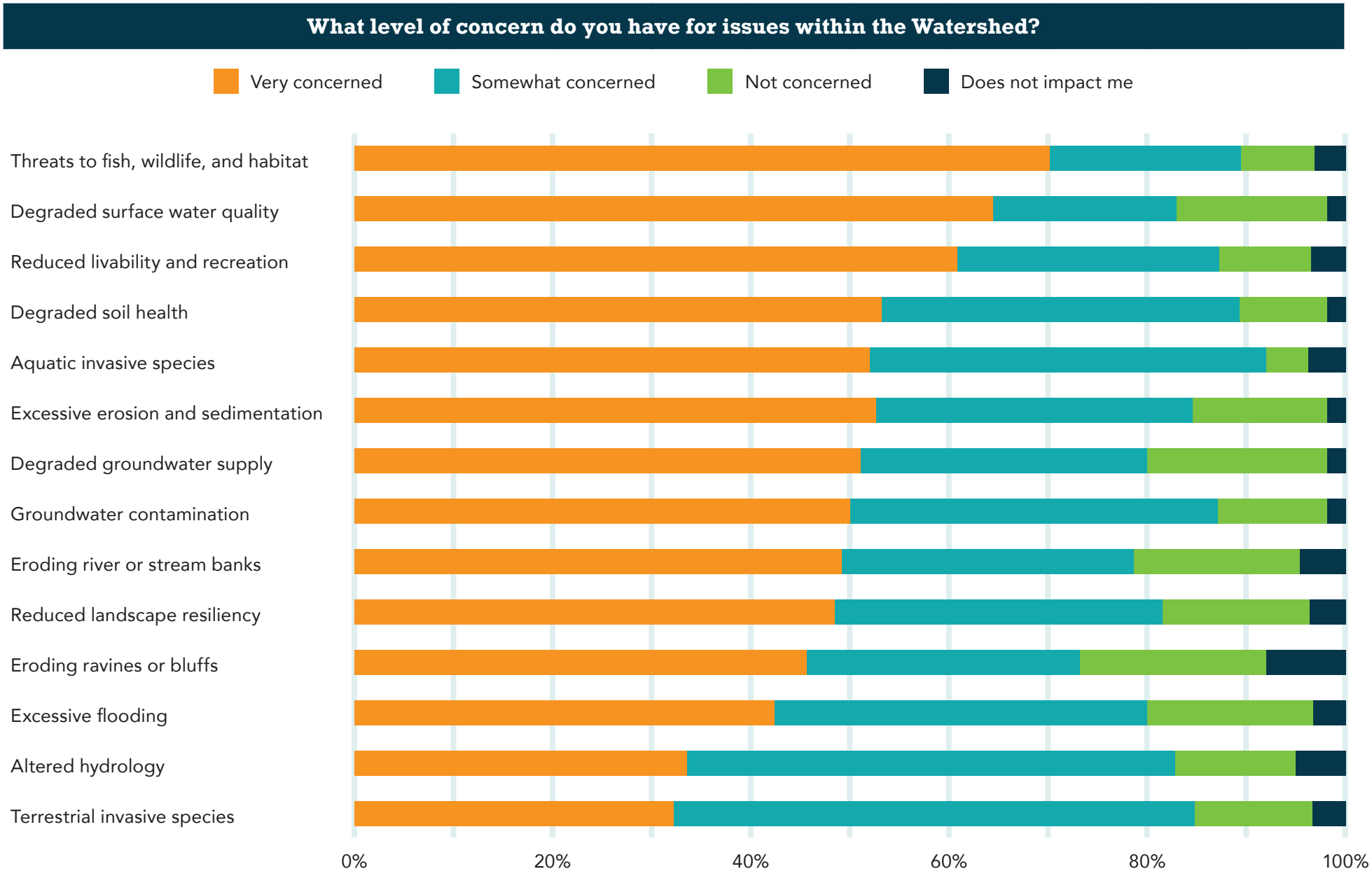


Figure 2.9: Ranked Level of Concern by Survey Respondents for Issues within the Watershed

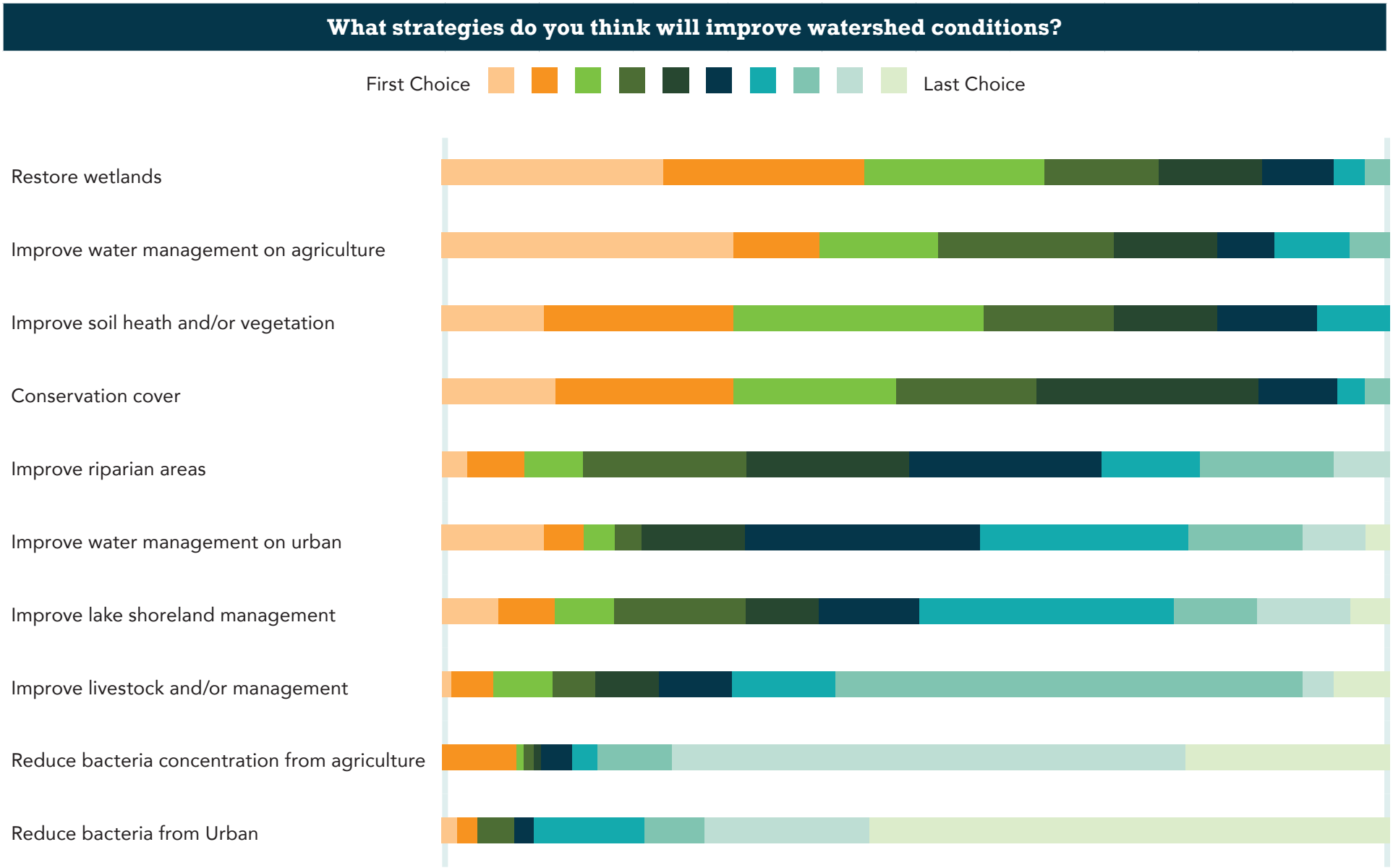
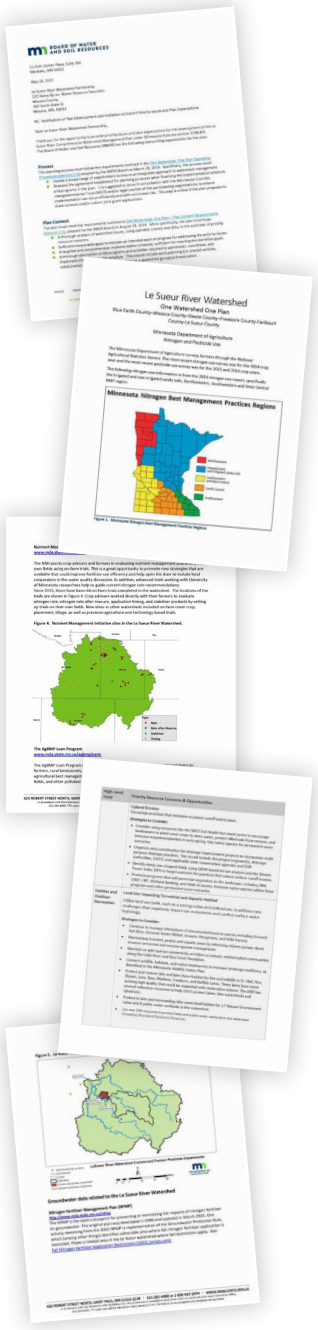


Figure 2:10: Ranked Results of What Strategies Survey Respondents Think Will Improve Watershed Conditions



Official Comment Letters

Comment letters with priority concerns were collected from local and state stakeholders. These letters are in *Appendix B*. Comments were received from the following stakeholders:

- Minnesota Board of Water and Soil Resources *(BWSR)* on May 24, 2021
- Minnesota Department of Agriculture *(MDA)* on May 27, 2021
- Minnesota Department of Health *(MDH)* on May 28, 2021
- Minnesota Department of Natural Resources *(DNR)* on May 25, 2021
- Minnesota Pollution Control Agency *(MPCA)* on May 24, 2021
- Faribault County on May 4, 2021
- Faribault Soil and Water Conservation District *(SWCD)* on May 12, 2021
- Waseca Soil and Water Conservation District *(SWCD)* - letter not dated

Issues, resources, and priorities gathered from the documents, reports, comment letters, and the kickoff meeting were categorized as either a value, concern, or strategy.

The values and concerns for each resource category were utilized in drafting the issue statements. Strategies were considered later in the plan development process when actions were selected to address the issue statements. The strategies are also referred to as implementation actions.

Issues were classified by resource category and subcategory. Occasionally, an issue fell under multiple resource categories and was assigned to all appropriate categories. Categories include:

Surface water

Groundwater

Natural resources

Leadership

Emerging issues

Quality of life

Subcategories for each of these are listed in *Table 2.1*, along with the corresponding number of occurrences of each subcategory.

Table 2.1: Categories and Subcategories used to Group Background Information

Surface Water

Subcategory	Occurrence
Surface Water Quality	144
Altered Hydrology	52
Erosion and Sediment Control	35
Water Rate and Quantity	31
Other	30
Drainage System Management	29
Flooding and Floodplain	14
Stormwater Management	12
Protect Surface Water Resources	5

Groundwater

Subcategory	Occurrence
Groundwater Quality	13
Other	9
Drinking Water Supply	7
Protect Groundwater Resources	7
Groundwater Quantity	5
Infiltration and Recharge	3

Natural Resources

Subcategory	Occurrence
Fish Habitat	40
Upland Habitat	10
Other	9
Wetland Habitat	8
Invasive Species	8
Preserve Sites of High Ecological Value	2
Manage, Enhance, and Restore Habitat	2
Preserve Prime Farmland	1
Protect Soil Health	1

Table 2.1 (Continued): Categories and Subcategories used to Group Background Information

Leadership

Subcategory	Occurrence
Public Outreach	34
Data + Studies Availability	28
Policy + Regulation	27
Collaboration	10
Other	9
Financing	8
Stakeholder Involvement	6

Emerging Issue

Subcategory	Occurrence
Climate Change and Resilience	11
Other	9
Contaminants of Emerging Concern	6
Reduce Pesticide and Fertilizer Impacts	3
Chlorides	1
Land Development and Changes	1

Quality of Life

Subcategory	Occurrence
Aquatic Recreation	12
Other	9
Aquatic Consumption	3

Priority Issues and Issue Statements

Thirty-six draft issue statements were group based on the results of the resource category and subcategory list in Table 2.2. The draft issue statements were grouped by category with two in the emerging concerns, three in groundwater, eight in leadership, six in natural resources, one in quality of life, and sixteen in surface water.

Table 2.2: Draft Issue Statements

	Concern	Draft Issue Statement
Surface Water	Wetlands	A significant loss of wetlands and wetland function from historical ditching, drainage, and land use changes.
	Implementation	The implementation of voluntary best management practices has not met the level of adoption needed to meet watershed goals.
		A lack of implementation of multipurpose drainage management practices.
	Erosion	Ravine, bank, and bluff erosion contribute sediment to rivers and streams and pose a risk to damage or loss of public and private infrastructure.
		Erosion of agricultural lands delivers sediments to waterbodies.
		Degraded soil health has led to reduced soil water retention, decreased infiltration, and increased erosion furthering the impacts of altered hydrology.
		The Le Sueur River delivers large sediment loads to downstream waters such as the Blue Earth River, Minnesota River, and Lake Pepin.
	Quantity, Rate, and Flooding	Increased flood risk due to reduction or loss of floodplain connectivity.
		Increases in flooding frequency and intensity has created risks to public safety and vital infrastructure
		Increases in peak flows and annual flow volume as a result of altered hydrology, shifts in cropping practices, increase in drainage, and decrease in evapotranspiration.
		Increases in impervious surfaces in urban areas increase runoff volumes and velocities.
	Water Quality	There is degraded water quality in rivers and streams due to high sediment and nutrient loading.
		There is degraded water quality in lakes due to excess nutrients, specifically phosphorus.
		Streams are impaired due to high E. Coli (bacteria) levels in surface waters.
		Urban, industrial, and commercial runoff contaminants such as pesticides, fertilizers, oil, metals, pathogens, salt, debris, etcetera degrade water quality.
		The Le Sueur River delivers sediment nutrient loads to downstream waters such as the Blue Earth River, Minnesota River, and Lake Pepin.

Table 2.2: Draft Issue Statements

	Concern	Draft Issue Statement
Groundwater	Groundwater Testing	There is insufficient testing of groundwater contaminants to assess drinking water quality and safety.
	Groundwater Quality	Elevated contaminants in groundwater, particularly nitrates, are an ongoing threat to drinking water quality and public health.
	Groundwater Quantity	A loss of groundwater recharge as a result of altered hydrology.
	Concern	**Draft Issue Statement**
Natural Resources	Aquatic Habitat	Poor water quality causes a lack of diversity and abundance in aquatic life and habitat.
		Barriers such as dams, weirs, and culverts restrict aquatic connectivity.
	Invasive Species	Aquatic invasive species (AIS) threaten native ecosystems and recreational opportunities.
		Terrestrial invasive species threaten native ecosystems and recreational opportunities.
	Upland Habitat	A loss or degradation of natural corridors fragments upland habitat.
	Riparian and Shorelands	A reduction in quality and quantity of riparian and shoreland habitat.
	Concern	**Draft Issue Statement**
Leadership	Technical Assistance	Limited staff capacity, staff turnover, and funding limit progress toward watershed goals.
		A lack of technical understanding amongst decision makers and public related to issues and strategies for protection of surface water, groundwater quality and quantity, and drinking water.
	Coordination and Policy	Insufficient collaboration and coordination between citizens, LGUs, and state agencies.
		State programs do not allow enough flexibility to meet local needs.
		A lack of consistency and coordination across and between counties in the process and proceedings of drainage management.
		A lack of consistency and coordination across and between counties related to ordinances, policy, and enforcement.
		There may be a lack of regulatory controls on development in and near sensitive habitat areas.
	Data and Studies	A lack of monitoring data, analysis, and research across the watershed to assess waterbodies and inform watershed planning.

Table 2.2: Draft Issue Statements

	Concern	Draft Issue Statement
Emerging Issues	Contaminants of Emerging Concern	Contaminants of emerging concern (PFAS, PCBs, etc.,) pose an uncertain risk to human health.
	Climate Change	Increased precipitation amounts and intensities contribute to higher peak flow rates and increased volume of runoff.
	Concern	**Draft Issue Statement**
Quality of Life	Recreation	Poor surface water quality and habitat degradation limit outdoor recreation.

The draft issue statements were presented to the Steering Team where members began the prioritization process by categorizing them as:

- An absolute priority for inclusion in this 10-year plan
- A priority, but only if time and money allows
- Not a priority for this 10-year plan; meaning it is okay if it doesn't get included

The results were given a weighted rank based on the responses and discussions with the Steering Team to provide additional context for edits and revisions. Upon feedback, the issue statements with identified overlap, emerging themes, or high value secondary benefits were combined by resource concern. *Tables 2.2 and 2.3* show the original 36 draft issue statements and corresponding weighted rank and the refined issue statement as distributed by resource category and those corresponding weighted ranks. The results of this process were used to develop nine priority resource concerns that will be the focus of the Plan. The priority resource concerns and priority issues, along with the methodology for ranking, were reviewed by the Technical Advisory Committee with adjustments made based on their recommendations. Additional minor adjustments were made to the priority issue statements after the priority resources were identified and implementation strategies were developed. These adjustments were made to better align the priorities with the realities and constraints to implementing the actions necessary to achieve measurable goals. Once the issue statements had been refined and organized, they were presented to the Policy Committee for approval.

Table 2.3: Ranked Resource Concerns

Rank	Resource Concerns	Issue Statement(s)	Weighted Priority Rank
1	Water Quality in Rivers and Streams	There is degraded water quality in rivers and streams due to high sediment and nutrient loading.	7
2	Water Quality in Lakes	There is degraded water quality in lakes due to excess nutrients, specifically phosphorus.	4.38
3	Erosion	Degraded soil health has led to reduced soil water retention, decreased infiltration, and increased erosion furthering the impacts of altered hydrology.	4.75
		Erosion of agricultural lands delivers sediments to waterbodies.	6.63
		Ravine, bank, and bluff erosion contribute sediment to rivers and streams and pose a risk to damage or loss of public and private infrastructure.	4.38
4	Water Quantity, Rate, and Flooding	Increases in peak flows and annual flow volume as a result of altered hydrology, shifts in cropping practices, increase in drainage, and decrease in evapotranspiration.*	4.75
		Increased precipitation amounts and intensities contribute to higher peak flow rates and increased volume of runoff.*	6.25
		Increases in flooding frequency and intensity has created risks to public safety and vital infrastructure.*	6.25

**Combined into one issue statement to reflect complexity and interconnectedness of factors influencing water quantity, rate, and flooding.*

Table 2.3: Ranked Resource Concerns

Rank	Resource Concerns	Issue Statement(s)	Weighted Priority Rank
5	Wetlands	A significant loss of wetlands and wetland function from historical ditching, drainage, and land use changes.	5.88
6	Leadership	A lack of technical understanding amongst decision makers and public related to issues and strategies for protection of surface water, groundwater quality and quantity, and drinking water.	6.63
		The implementation of voluntary best management practices has not met the level of adoption needed to meet watershed goals.	5.13
7	Bacteria	Streams are impaired due to high E. Coli (bacteria) levels in surface waters.	5.88
8	Riparian and Shorelands	A reduction in quality and quantity of riparian and shoreland habitat.	5.13
9	Drinking Water and Groundwater Protection	Elevated contaminants in groundwater, particularly nitrates and arsenic, are an ongoing threat to drinking water quality and public health.	4.75

Chloride
High levels of chloride can corrode and weaken metallic piping and fixtures, give a "salty" taste to the drinking water, damage household appliances, boilers, and, if the water is being used for irrigation, it may inhibit the growth of vegetation.

Pesticide
A substance used for destroying insects or other organisms harmful to cultivated plants or to animals.

Fertilizer
A chemical or natural substance added to soil or land to increase its fertility.

Emerging Issues

This plan is based on existing knowledge and evaluation of existing concerns. However, emerging issues may require a shift in focus or may influence the implementation plan priorities and actions.

There were six general categories of emerging issues that were identified in the aggregated data:

- **Chlorides**
- Climate change
- Contaminants of emerging concern
- Land development and changes
- Reduce **pesticide** and **fertilizer** impacts
- Other emerging issues

Many of these issues have limited data to assess the extent and nature of the problem and are beyond the authorities or resources of the Partnership, although the existing data, especially for climate change and land development, were incorporated whenever possible. As such, the Partnership did not prioritize emerging issues as a priority issue for the Plan *(Figures 2.11-2.13)*. Nevertheless, water quantity rate and flooding, an issue greatly impacted by climate change, has been identified as a priority issue for focus in the Plan. Therefore, the Partnership integrated actions that aim to alleviate impacts of climate change which include implementing water storage projects which are described in more detail in *Section 5*. The Partnership will continue to monitor emerging issues throughout the planning period to ensure the implementation actions address the active issues.

Figure 2.11: Pesticide Applicator

03

PRIORITY ISSUES, TARGETING, AND MEASURABLE GOALS

Did you know?

The Le Sueur River delivers large sediment loads to downstream waters such as the Blue Earth River, Minnesota River, and Lake Pepin.

PRIORITY ISSUES, TARGETING, AND MEASURABLE GOALS

Introduction

Following the selection and ranking of priority issue statements presented in *Section 2*, the Partnership developed a framework for each issue statement. To address the concerns for each issue statement, the framework defines desired future conditions, measurable goal(s), priority resources, targeting criteria, and strategies.

This framework served as an outline that guided the process to develop measurable goals and the targeted implementation schedules that are described in *Section 4*. The framework was created and updated at various Steering Team and Technical Advisory Committee meetings. The meetings included multiple avenues to provide and incorporate feedback, including virtual interactive whiteboards *(Figure 3.1)*, gallery walks, written surveys, and open discussion.

Adjustments to the framework were made during the development of the implementation schedule to better align with the realities and constraints associated with implementing the actions. The framework for each issue statement, including the priority resource targeting approach and final measurable goals, is summarized in this section, and organized in order of issue statement priority. For the entire issue statement framework document developed by the Partnership see *Appendix D*.

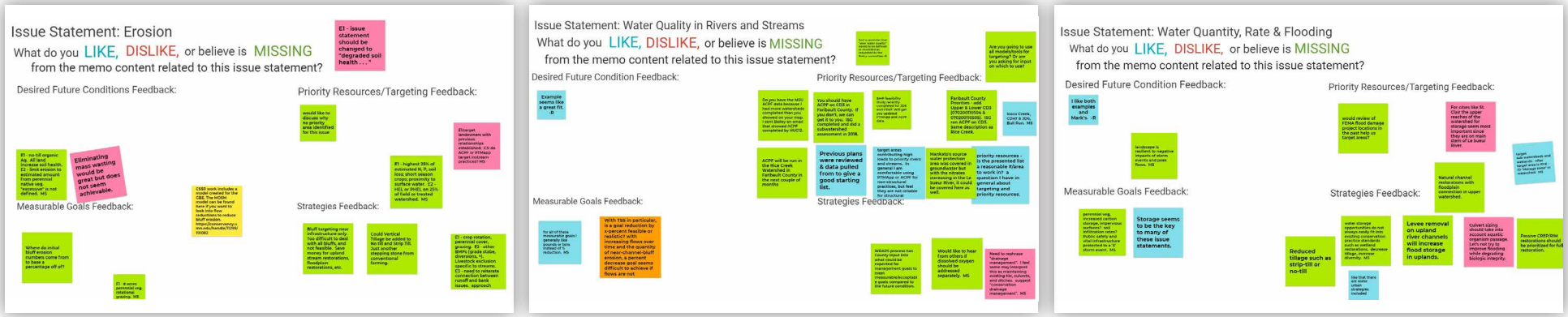


Figure 3.1: Interactive Whiteboards

Water Quality in Rivers and Streams

Many factors contribute to the health or water quality in rivers and streams. These factors range from natural occurrences to human induced activities, and all of them may impact the ability to ensure the watershed's water resources to the fullest extent.

Issue Statement

The overarching issue statement for water quality in rivers and streams is: **There is degraded water quality in rivers and streams due to high sediment loading and nutrient loading.** Water bodies with poor water quality are identified as those not meeting the MPCA's water quality standards set for the water bodies designated use.

Additional impacts observed as a result of the poor water quality in river and streams issue include: large sediment load contributions from the Le Sueur River to downstream waters such as the Blue Earth River, Minnesota River, and Lake Pepin, as well as a lack of diversity and abundance in aquatic life and habitat, and limited outdoor recreation.

Desired Future Conditions

All rivers and streams meet applicable water quality standards.

Additional Context

Focus of the Plan should be on priority restoration resources, but attention should also be given to maintaining and protecting reaches of streams that meet water quality standards *(Table 3.1)*.

Index of Biological Integrity (IBI) fish and aquatic macroinvertebrate (macro) scores should be reviewed as updates become available (MPCA updates this information during their surface water assessment every ten years). Water quality is a large stressor for fish and macros in the Watershed and IBI scores measure the condition of the biological communities, providing a detailed picture of the overall water quality, as opposed to the snapshot in time provided by water chemistry samples. Improvements to water quality should result in improvements to stream/aquatic habitat, which would be reflected in improved IBI scores.

Many practices addressing water quality in rivers and streams will overlap with one or more of the other issues, providing improvements to those issues as well. These practices are referred to as multi-benefit practices and priority will be given to these practices to further multiple plan goals at a time.

Other contaminants not addressed through this issue include dissolved oxygen, polychlorinated biphenyls (PCBs), mercury, and bacteria.

While these contaminants are not addressed in the plan, the partners acknowledge that they exist and will address concerns related to these contaminants as new data is collected.

Measurable Goals

Table 3.1: HSPF Pollution Reduction Estimates for Priority Streams Achieved Through the Actions Identified in this Plan

Priority Streams								
Management Zone	Stream	HSPF* Subwatershed Number	Existing Loads			Reduction		
			TSS (tons/yr)	TP (lbs/yr)	TN (lbs/yr)	TSS (tons/yr (%))	TP (tons/yr (%))	TN (tons/yr (%))
Upper Le Sueur	Waseca CD 47 and JD 6	491	5,407	37,415	1,206,546	590 (10.8%)	3,000 (8.1%)	43,000 (3.5%)
	Little Le Sueur River	511	1,983	16,981	510,920	210 (10.4%)	1,400 (8.2%)	17,000 (3.3%)
Middle Le Sueur	Waseca CD 19	591	741	3,301	143,561	50 (7.4%)	200 (4.7%)	3,000 (2.0%)
	Iosco Creek	613	2,398	11,548	480,344	200 (8.4%)	700 (6.1%)	10,000 (2.2%)
Lower Le Sueur	Blue Earth CD 26, CD 83, and JD 22	631	1,198	6,452	238,785	130 (11.3%)	600 (8.5%)	9,000 (3.7%)
	Wilson Creek/Blue Earth CD 12**	690	28,083	44,259	700,960	540 (1.9%)	2,400 (5.5%)	20,000 (2.8%)
Upper Cobb	Upper Cobb	721	3,245	36,698	1,272,827	320 (9.8%)	3,100 (8.5%)	41,000 (3.2%)
Middle Cobb	Bull Run	735	1,771	24,661	894,498	150 (8.6%)	1,700 (7.1%)	24,000 (2.7%)
	Middle Cobb	745	15,437	109,647	4,832,386	780 (5.1%)	5,100 (4.7%)	83,000 (1.7%)
Lower Cobb	Beauford Ditch/Blue Earth CD 86	747	353	3,160	170,856	20 (5.4%)	200 (6.7%)	4,000 (2.5%)
	Lower Cobb	751	20,878	118,682	5,227,920	880 (4.2%)	5,900 (5.0%)	94,000 (1.8%)
Upper Maple	Faribault CD 3	789	2,313	27,956	934,596	370 (15.9%)	3,200 (11.3%)	52,000 (5.5%)
Middle Maple	Rice Creek	809	2,109	24,281	802,397	240 (11.5%)	2,000 (8.3%)	23,000 (2.9%)
Entire Watershed	**Le Sueur River Outlet**	**850**	**202,663**	**584,126**	**18,357,682**	**5,780 (2.9%)**	**28,800 (4.9%)**	**370,000 (2.0%)**

**Hydrological Simulation Program - FORTRAN (HSPF) Subwatershed Number*

***Wilson Creek/Blue Earth CD 12 is not explicitly modeled and is represented as a part of subwatershed 690 in the HSPF model. Therefore, modeled pollutant values for reach 690 are an overestimate for Wilson Creek loads because they include contributions from the entire subwatershed and in-channel process in the Le Sueur River within reach 690.*

Priority Resources and Targeting

Priority areas are determined by approved priority watercourses and their contributing watersheds *(Figure 3.2)*. Le Sueur River is also determined as a priority watercourse. Additional consideration will be given to practices that provide multiple benefits, utilizing the targeting criteria.

Table 3.2: Priority Streams Prioritization Criteria

Management Zone	Stream	Prioritization Criteria
Upper Le Sueur	Waseca CD 47 and JD 6	High loading TSS and N subwatershed from agricultural sources. Water quantity and flooding issues in New Richland.
	Little Le Sueur River	High loading TSS and N subwatershed from agricultural sources. Stream with potential to support trout habitat
Middle Le Sueur	Waseca CD 19	High loading TSS and N subwatershed from agricultural field sources. Farm America subwatershed and potential demonstration location.
	Iosco Creek	High loading TSS and N subwatershed from agricultural sources draining into Lake Elysian, a priority lake.
Lower Le Sueur	Blue Earth CD 26, CD 83, and JD 22	High loading TSS and N subwatershed from agricultural field sources.
	Wilson Creek/Blue Earth CD 12	High loading TSS subwatershed from ravine and gully sources.
Upper, Middle, and Lower Le Sueur	Le Sueur River	Loading impacts to downstream waters including Blue Earth River, Minnesota River, and Lake Pepin. Identified by the Minnesota Nutrient Reduction Strategy (NRS) as a priority watershed for N and P. Also identified by the Minnesota River Sediment Strategy as a priority watershed.
Middle Cobb	Bull Run	Community momentum and leadership
Lower Cobb	Beauford Ditch/Blue Earth CD 86	High loading TSS and N subwatershed from agricultural field sources.
Upper, Middle, and Lower Cobb	Cobb River	Nearly/Barely impaired. Freeborn Lake, a priority lake located within subwatershed.
Upper Maple	Faribault CD 3	Nearly/Barely impaired. High loading N subwatershed.
Middle Maple	Rice Creek	High N loading subwatershed with three priority lakes, Rice, Bass, and Lura Lakes, within the subwatershed.

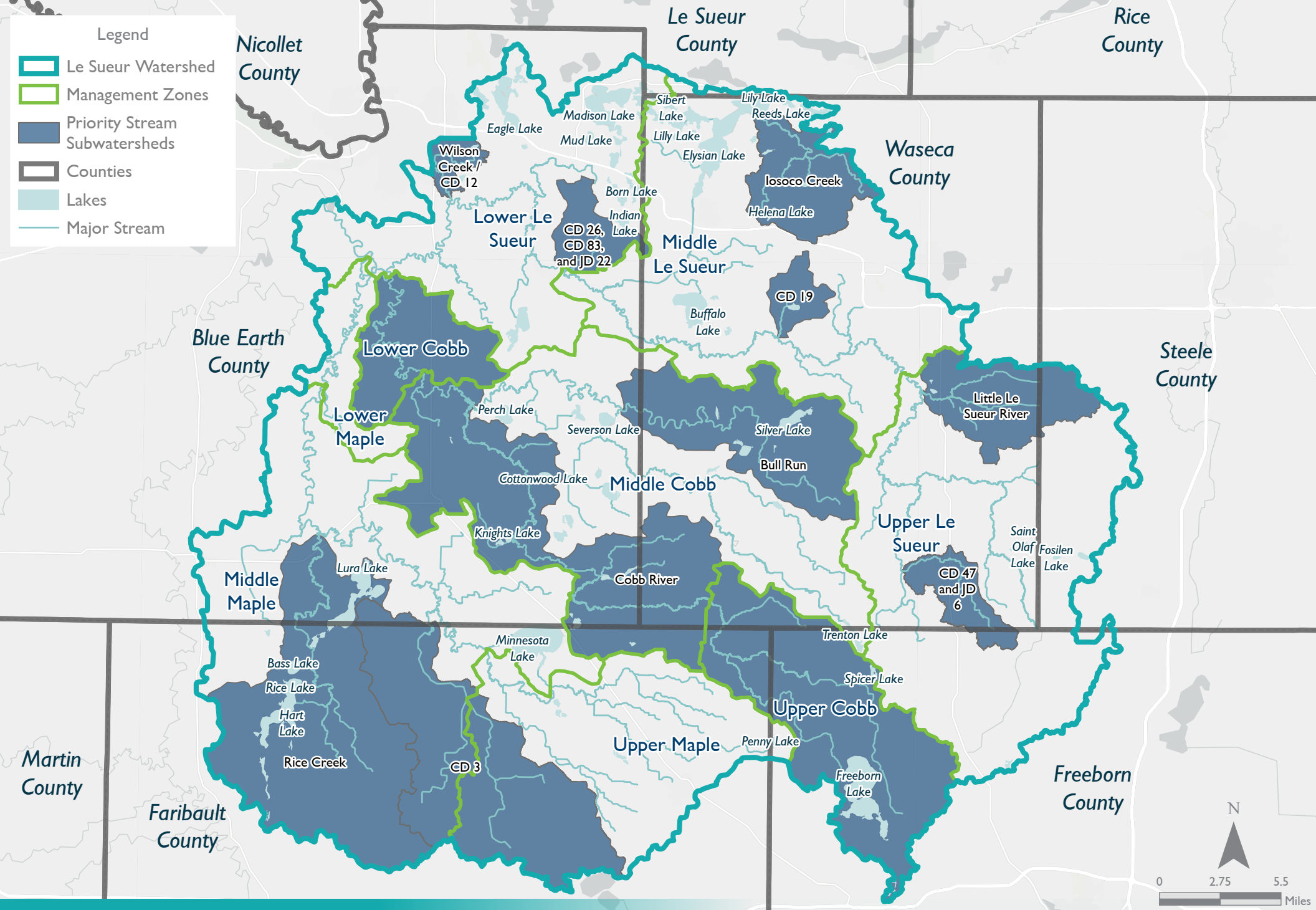
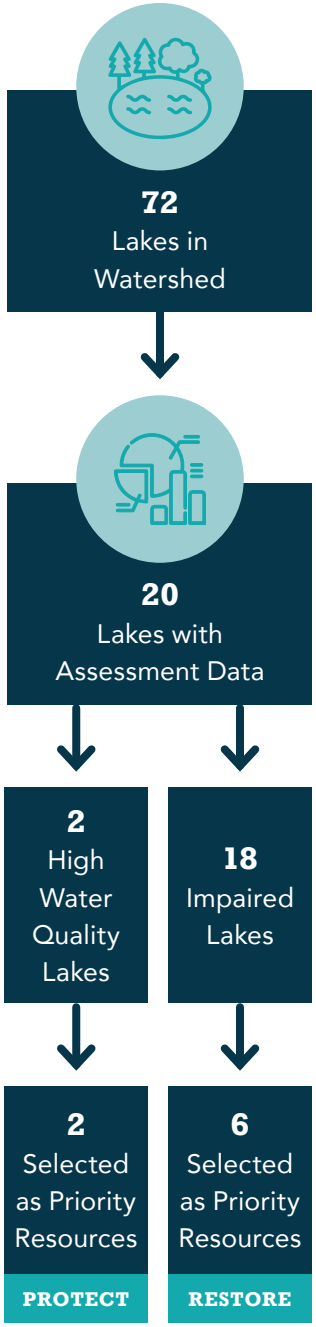


Figure 3.2: Priority Stream Watersheds



Water Quality in Lakes

The quality of the water within area lakes is a large concern for the partners. Some of the impacts of degraded water quality in lakes include a lack of diversity and abundance to aquatic life and habitat, as well as limiting opportunities for outdoor recreation.

Issue Statement

The issue statement for water quality in lakes is: **There is degraded water quality in lakes due to excess nutrients, specifically phosphorus.**

For the purposes of this Plan and plan implementation, the Partnership is defining lakes with degraded water quality as those lakes that do not meet the MPCA's water quality standards for the lake's designated use category, also known as Impaired Lakes. Additionally, this issue statement focuses primarily on nutrients such as total phosphorus (TP), but will consider practices that primarily address sediment and erosion control concerns due to the correlation between sediments and TP. This issue statement is not intended to address aquatic invasive species (AIS). AIS efforts conducted by other organizations may be supported and promoted by the partners, if the efforts align with the goals of the partnership and capacity to assist is available.

Desired Future Conditions

All lakes meet water quality standards for aquatic life and recreational use.

Measurable Goals

Table 3.3: HSPF Pollution Reduction Estimates for Priority Lakes Achieved Through the Actions Identified in this Plan

Priority Lakes					
Management Zone	**Lake**	**HSPF* Subwatershed Number**	**Existing Load (TP (lbs/yr))**	**Reductions (TP (lbs/yr))**	**County**
Upper Le Sueur	Saint Olaf Lake	452	3,253	282 (8.7%)	Waseca
Middle Le Sueur	Reeds Lake	614	73	0.3 (0.4%)	Waseca
	Elysian Lake	616	11,635	429 (3.7%)	Waseca
Lower Le Sueur	Madison Lake	676	1,251	19 (1.5%)	Blue Earth
Upper Cobb	Freeborn Lake	712	1,457	34 (2.3%)	Freeborn
Middle Maple	Rice Lake	802	4,638	209 (4.5%)	Faribault
	Bass Lake	806	71	0.3 (0.4%)	Faribault
	Lura Lake	808	167	0.9 (0.5%)	Blue Earth

**Hydrological Simulation Program-FORTRAN (HSPF) Subwatershed Number*

Priority Resources and Targeting

Of the 72 lakes in the Watersheds, 20 have data to develop the two sets of metrics that were evaluated to prioritize lakes *(Table 3.3 and Figure 3.4)*. The first set of metrics are based on physical characteristics and include lake size to drainage area, lake land use disturbance, percent mean phosphorus (P) from standard, P sensitivity, biological significance, impairment status, and water clarity trends. The second set of metrics for prioritizing lakes is based on the professional judgment criteria according to stakeholder surveys. Professional metric data included momentum of current efforts, local support, political support, and readiness of upcoming projects. Each metric ranged in value from one to three with the final score equal to the average.
A detailed summary of the lake metric analysis and metric values are included in the framework document in *Appendix D*.

As a result of the metric analysis, 20 lakes with available data were ranked. The results of the metric analysis were compared to input gathered from the public kickoff meeting. Based on analysis and public input, the Steering Team selected the top eight lakes listed in *Table 3.3* for identification as priority lakes within the Watershed.

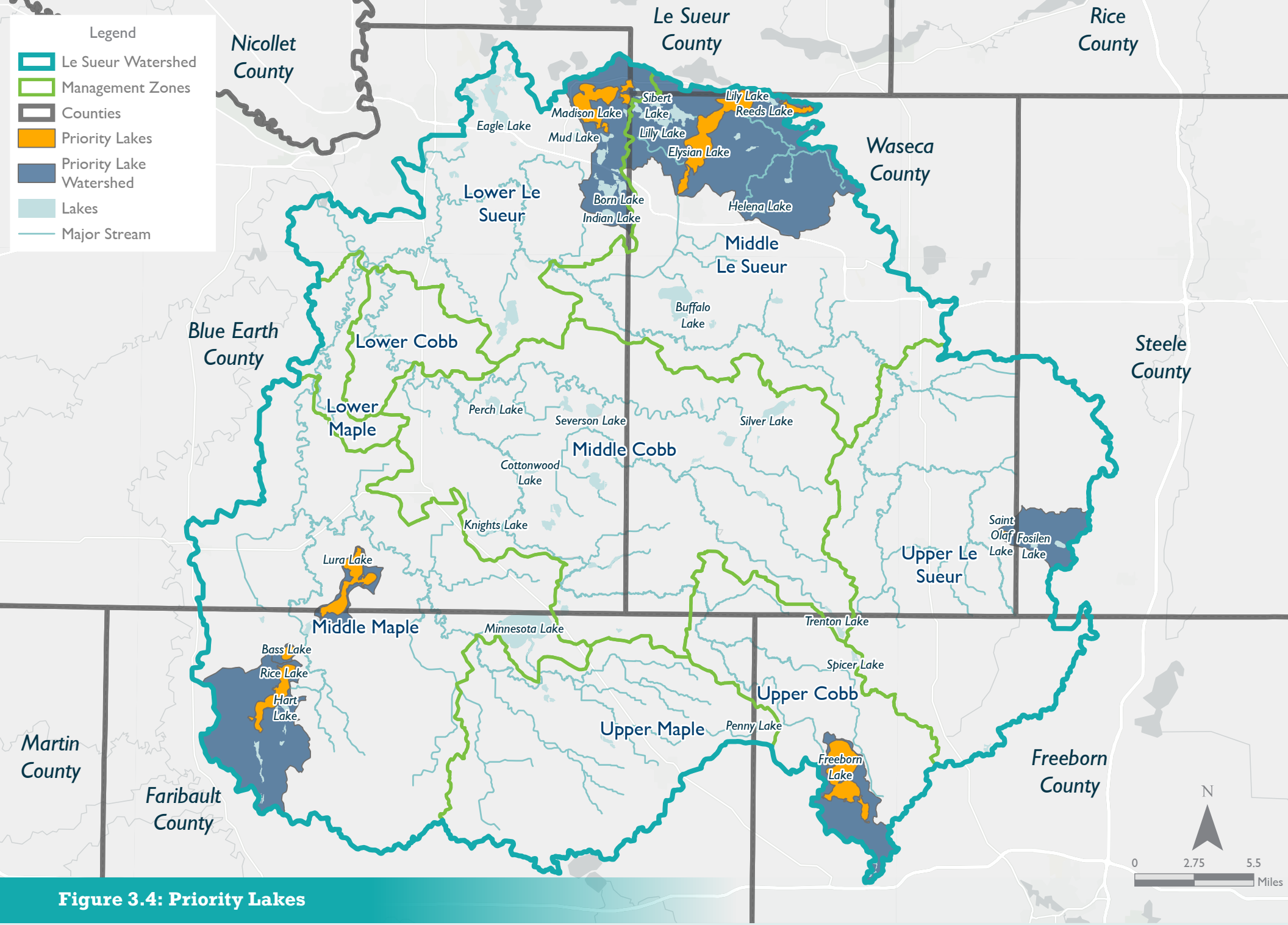


Figure 3.4: Priority Lakes

Increased Erosion

With multiple types of erosion and sources of sediment greatly impacting the Watershed, Increase Erosion resource concern was divided into three categories: soil health, upland erosion, and near channel sources. Due to different mechanisms of erosion, each category had unique issues, goals, and targeting to best improve water quality conditions. Unique issue statements, desired future conditions, and measurable goals were determined for each category.

Issue Statements

Soil Health: Degraded soil health has led to reduced soil water retention, decreased infiltration, and increased erosion furthering impacts of altered hydrology

Upland Soil Erosion: Erosion of agricultural lands delivers sediment to waterbodies

New Channel Source Erosion: Ravine, bank, and bluff erosion contribute sediment to rivers and streams and pose a risk to damage or loss of public and private infrastructure.

Desired Future Conditions

Soil Health: All landowners in the Watershed implement some form of soil health practice to work towards achieving the five soil health principals of soil armoring, minimizing soil disturbance, plant diversity, continual live plant/root, and livestock integration that improves soil for agricultural production and reduces negative impacts to surface water.

Upland Soil Erosion: Identify and treat all upland areas that contribute excessive sediment to waterbodies.

New Channel Source Erosion: Ravine, bank, and bluff erosion is reduced greatly so that the Le Sueur River is no longer impaired for excess sediment and vital infrastructure is protected.

Targeting

With numerous areas within the Watershed facing erosion issues, targeting efforts is essential to ensure that measurable improvements are achieved *(Figures 3.5-3.6)*. To target priority areas for erosion, multiple benefits that overlap with other priority issues were considered, as well as targeting areas specific to erosion. Targeting for multiple benefits includes focusing on areas that address high sediment loads from croplands that align with both priority stream and/or priority lake watersheds. Targeted areas specific to erosion include locations of bluffs and ravines. Additional targeting criteria for consideration includes areas of highly erodible lands (HEL). Available tools such as Prioritize, Target, and Measure Application (PTMApp) and Agricultural Conservation Planning Framework (ACPF) will be used for project siting where completed.

Measurable Goals

Soil Health

- Establish 21,467 acres of newly implemented soil health practices (cover crops, conservation till, and other soil health practices).

Upland Soil Erosion

- Reduce upland sediment by 7,393 tons per year.

Near Channel Source Erosion

- Reduce near-channel sediment loads in the incised zone by 1,521 tons per year.
- Reduce sediment load at Le Sueur River outlet by 8,914 tons per year.

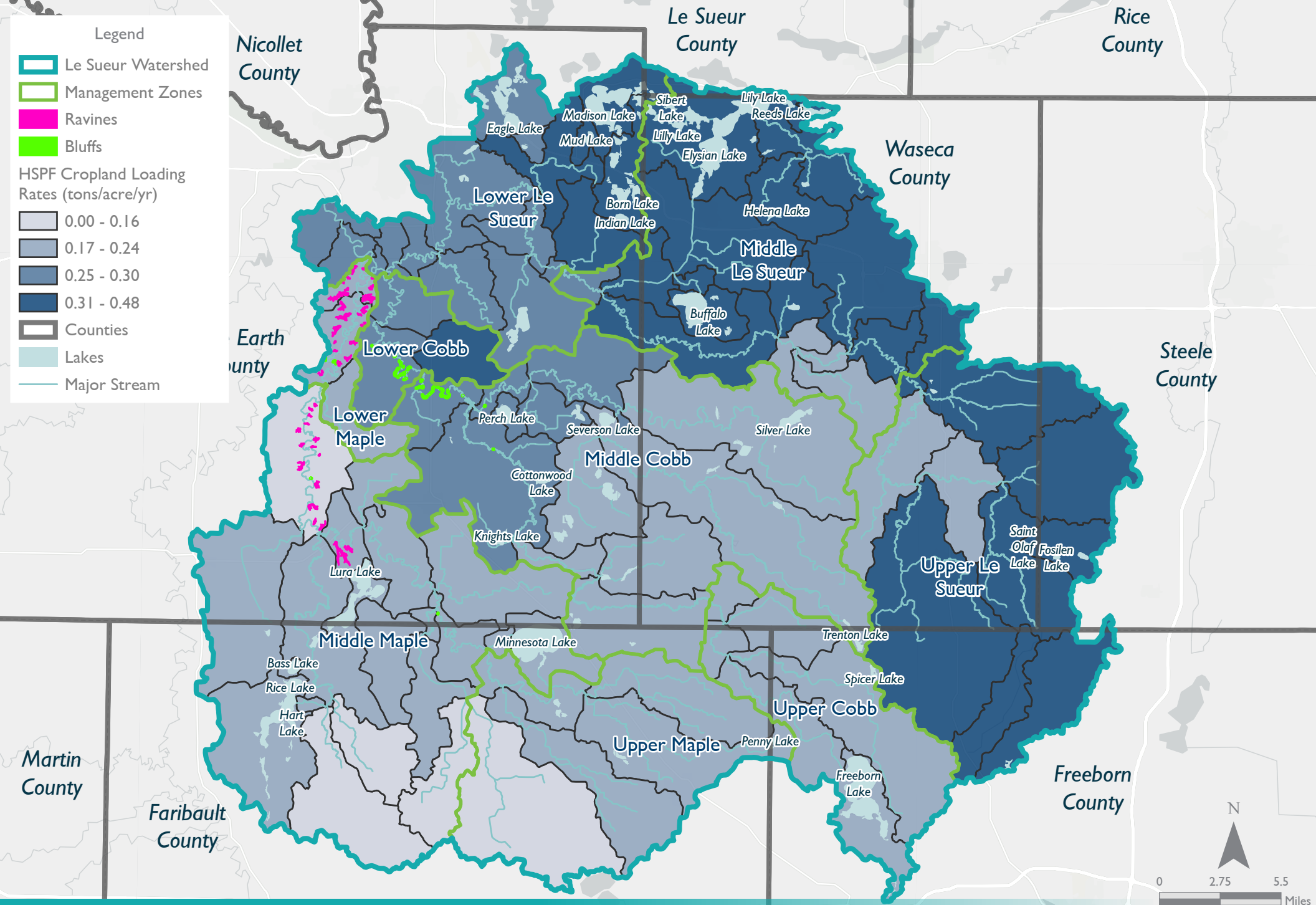


Figure 3.5: Sediment Source Targeting Map

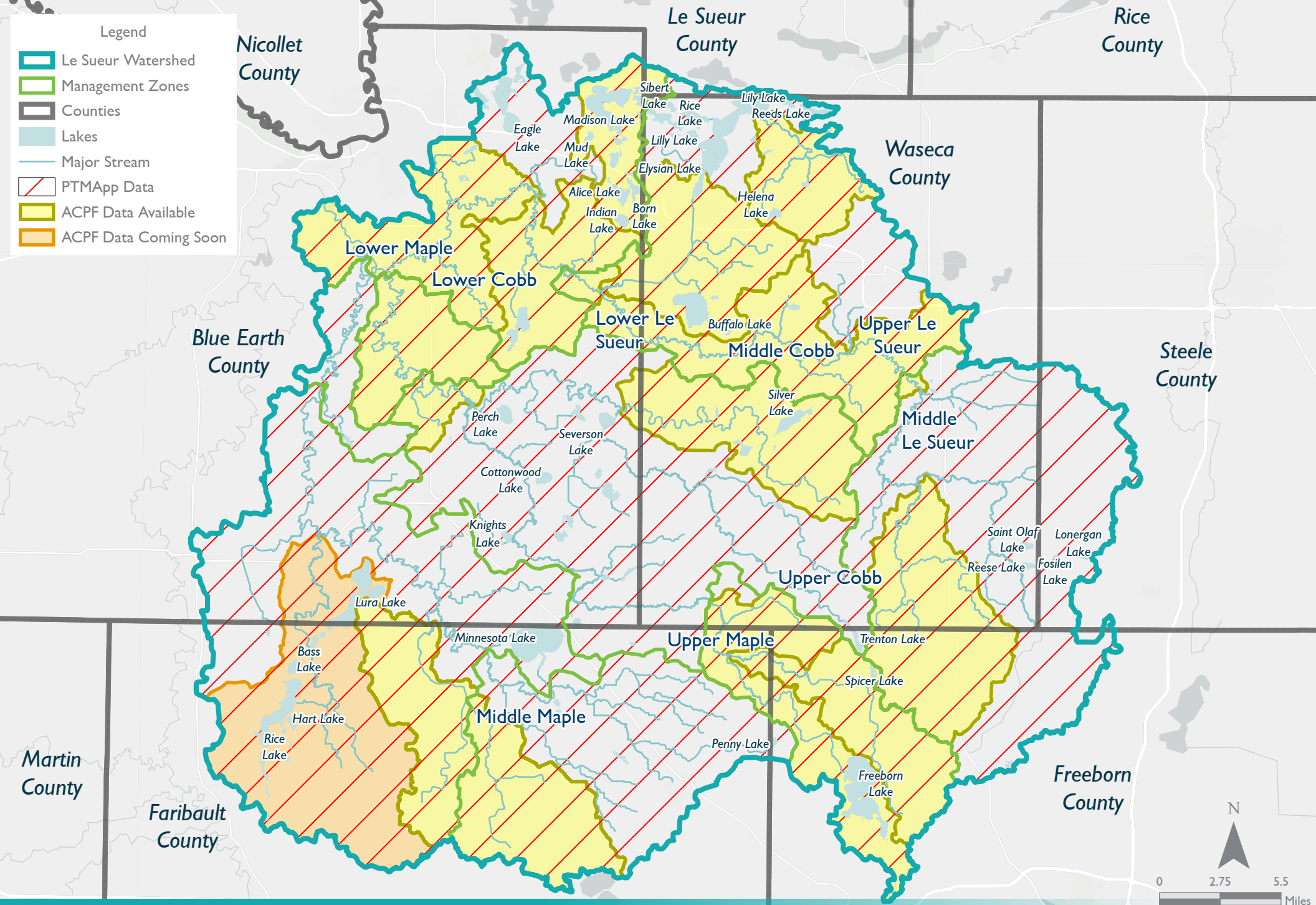


Figure 3.6: ACPF and PTMApp Completed in the Watershed

11,246
Acre-feet of storage

Check it out!
Check out Capital Improvement Projects in Section 5 for more information on implementation of large scale storage projects.

Altered Hydrology
Manmade modifications of historic river flows, water levels, and groundwater.

Water Storage Practices

- Retention structures and basins
- Acquisitions of flowage rights
- Soil and substrate infiltration
- Wetland restorations, creation or enhancements
- Channel restoration or enhancement
- Floodplain restoration or enhancement

Water Quantity, Rate, and Flooding

Issue Statements

The issue of water quantity, rate, and flooding is a complex issue facing the Watershed, as it has numerous contributing factors such as increases in precipitation amounts and intensities, altered hydrology, increases in drainage, shifts in cropping practices, and decreases in evapotranspiration. This results in increases in peak flows and annual flow volume as well as increases in flooding frequency and intensity that create risks to public safety and vital infrastructure.

Measurable Goals

To address these issue statements, a measurable goal to implement 11,246 acre-feet of storage was established. Traditional water storage BMPs, such as Water and Sediment Control Basins (WASCOBs), as well as practices that retain water in soils and increase infiltration such as cover crops and reduced tillage. These will be implemented to make progress towards this goal. Additionally, the Partnership is committed to reviewing opportunities for larger-scale water storage projects whenever possible. These projects will make greater improvements to water quantity, and water quality, concerns within the Watershed. Potential larger scale water storage projects include wetland restorations and early coordination with the drainage authorities to incorporate water storage components into their drainage projects. The number of acre-feet identified within the goal is intended to be achievable by the partners within the 10 year implementation time frame, however, partners understand that considerably more storage will be necessary to fully address the storage concerns within the Watershed. The partners intend to review the progress towards this goal at the 5 year review and adjust the goal as appropriate.

Desired Future Conditions

Landscape is resilient to negative impacts of rainfall events and peak flows including riverbank stability and flooding to urban and rural areas.

No net increase in runoff from the Watershed.

Targeting

Targeting implementation actions to address water quantity, rate, and flooding includes watersheds contributing to communities that experience flooding, such as St. Clair and New Richland *(Figure 3.7)*. Additionally, the time to travel will be used in junction with the zones established in the Management Option Simulation Model (MOSM) tool to determine management options considering cost effectiveness. Time to travel refers to the amount of time it takes water that falls at a specific location in the watershed to reach the outlet of the Watershed. The MOSM zones correspond as Zone 1 = incised, Zone 2 = transitional, and Zone 3 = upland. Further consideration is given to storage and treatment wetlands utilizing targeting criteria for resource concern related to loss of wetlands.

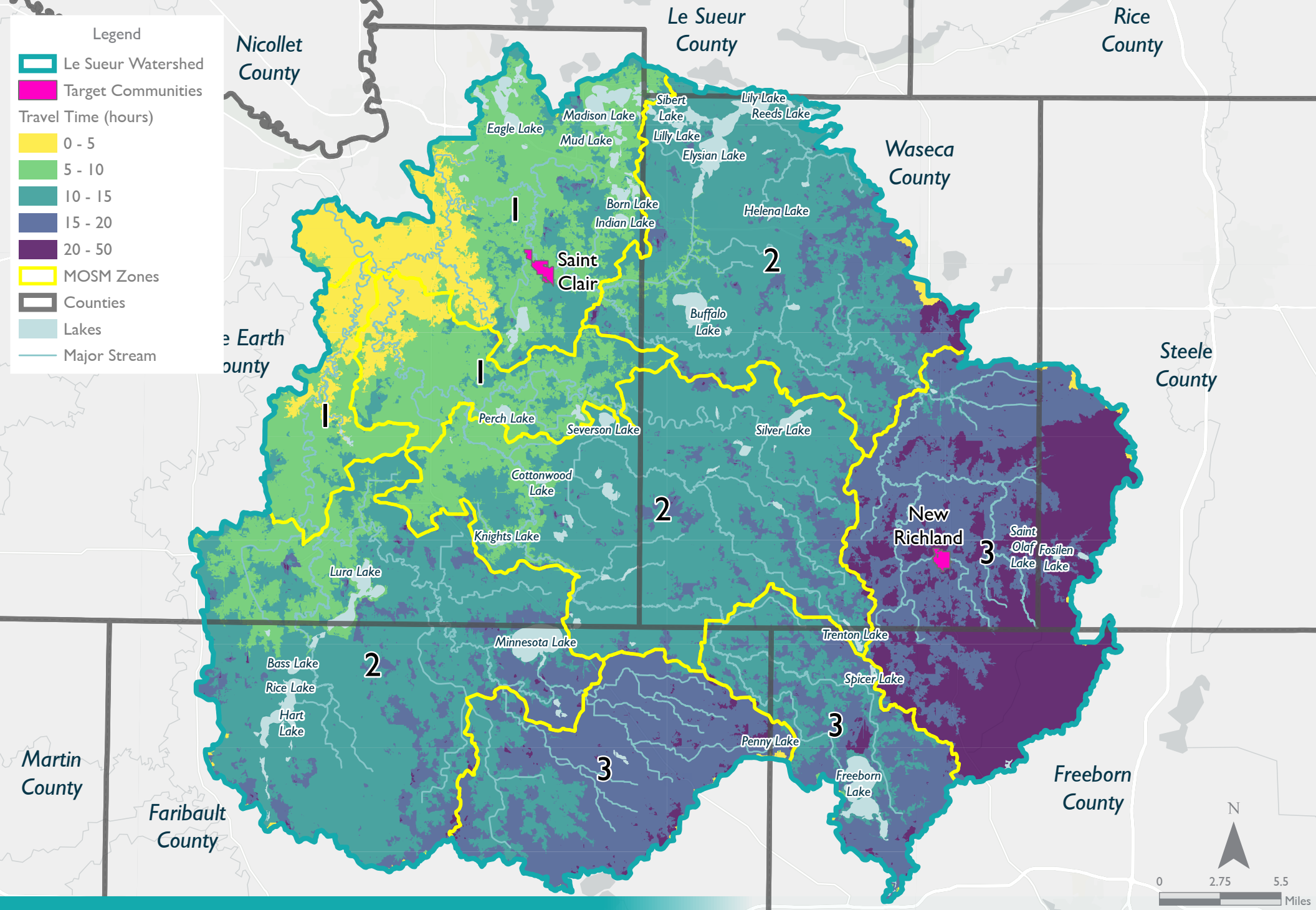


Figure 3.7: Water Storage and Flooding Targeting Map

3,614
acres of restored or installed wetlands

Measurable Goal

To address this issue, restoration and creation of small and large scale wetlands will be considered to achieve the measurable goal of 3,614 acres of restored or installed wetlands. The number of acres identified within the goal is intended to be achievable by the partners within the 10 year implementation time frame, however, partners understand that considerably more wetlands will be necessary to fully address the concerns within the Watershed. The partners intend to review the progress towards this goal at the 5 year review and adjust the goal as appropriate

Check it out!
Check out Capital Improvement Projects in Section 5 for more information on implementation of large scale storage projects.

Loss of Wetlands

Water quantity, rate, and flooding, existing studies and professional experience within the Watershed point to the loss of wetlands as a substantial issue worth specific, dedicated efforts *(Figure 3.8)*.

Issue Statement

A significant loss of wetlands and wetland function from historical ditching, drainage, and land use change.

Desired Future Conditions

- Restoration of wetlands to restore upland water storage capacity that mitigates downstream erosion issues and flooding issues
- No loss of existing wetlands
- Public is aware of and follows existing wetland regulations
- Wetland habitat is restored and enhanced

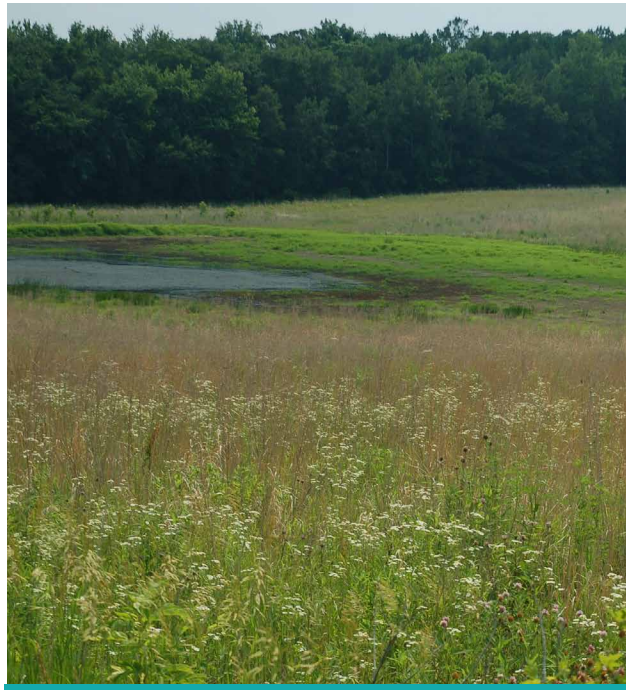


Figure 3.8: Wetland (Source: Carrie Jennings)

Targeting

Priority targeting areas for wetlands focus on landscape characteristics conducive to wetlands restoration or creation projects, while also targeting to address multiple benefits *(Figure 3.9)*. The restorable wetland inventory identifies locations potentially suitable for wetland restorations based on soil data. Additional characteristics that will be used to target project locations include the travel time, marginal croplands, and potential project locations identified in the digital elevation model (DEM) analysis for Blue Earth County, along with the Greenprint prioritization for the county. The MOSM tool will also be used to allocate storage efforts across the various zones and major drainage areas based on cost effectiveness. Multiple benefits will be accounted for by targeting areas within priority lake and stream watersheds.

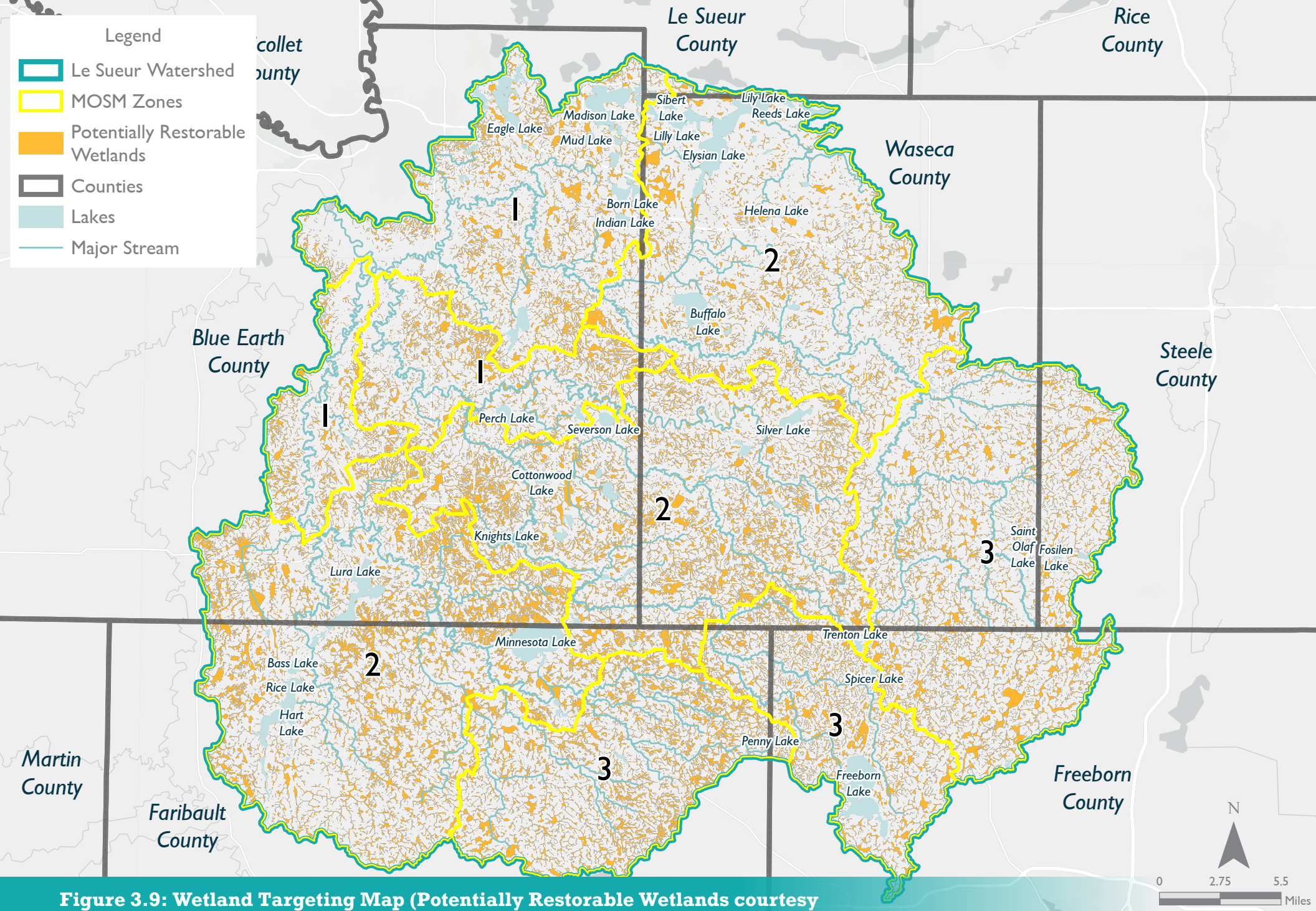


Figure 3.9: Wetland Targeting Map (Potentially Restorable Wetlands courtesy Restorable Wetland Inventory developed by the Natural Resources Research Institute, 2014)

Measurable Goals

Meet with local decision makers annually (or more frequently as appropriate) to provide educational information on upcoming projects (10 meetings).

Conduct one (1) outreach effort to citizens each year, focused on a specific surface or groundwater concern. Effort should include a variety of outreach components including but not limited to social media, mailings, newspaper articles or press releases, and open mic programs on local radio stations.

Check it out!
Check out Outreach and Eduction Program in Section 5 for more information on planned outreach and eduction efforts in the Watershed.

Leadership and Public Relationships and Education

The leadership issue focuses on the interpersonal relationships between local government unit staff, politicians and decision makers, the public, and other stakeholders. To effectively manage natural resources, improvement of these relationships and commitment to a shared vision is essential. The core components of this issue statement overlap with all other resource concerns and implementation actions within this plan, focusing on developing high quality relationships and trust within the watershed. The outreach and education section of this plan in Chapter 5 provides a framework for building relationships and trust, and should be applied, at least in part, to every landowner interaction.

Issue Statements

- A lack of technical understanding amongst decision makers and public related to issues and strategies for protection of surface water, groundwater quality and quantity, and drinking water.
- The implementation of voluntary best management practices has not met the level of adoption needed to meet watershed goals.

Desired Future Conditions

- All citizens and decision makers are aware of surface water and groundwater concerns and include sustainable alternatives in decision making that exceeds levels needed to meet goals.

Excess Bacteria in Surface Waters

Bacteria can be a complex issue to address due to the varying analysis results from sample to sample along with the difficulty in conducting adequate source tracking analysis. As a result, the partners have developed one overarching issue statement regarding this issue.

Issue Statement

Streams are impaired due to high E. Coli (bacteria) levels in surface waters.

Desired Future Conditions

All rivers and streams meet applicable bacteria (fecal coliform and E. coli) water quality standards.

Targeting

Priority areas to target bacteria concerns is focused on locations with known bacteria sources. Examples of these areas include municipalities, septic systems found to be out of compliance, feedlots, and agricultural fields that apply manure *(Figure 3.13)*.

Measurable Goals

Conduct at least thirty (30) one-on-one outreach efforts to promote manure management BMPs in coordination with feedlot compliance inspections and to increase voluntary adoption of manure management plans.

Replace forty-five (45) Subsurface Sewage Treatment Systems (SSTS). SSTS that are out of compliance and posing confirmed or potential hazards to water resources will be prioritized for these efforts *(Figures 3.10 - 3.12)*.

Figure 3.10: Septic system

Figure 3.11: Septic system

Figure 3.12: Septic system

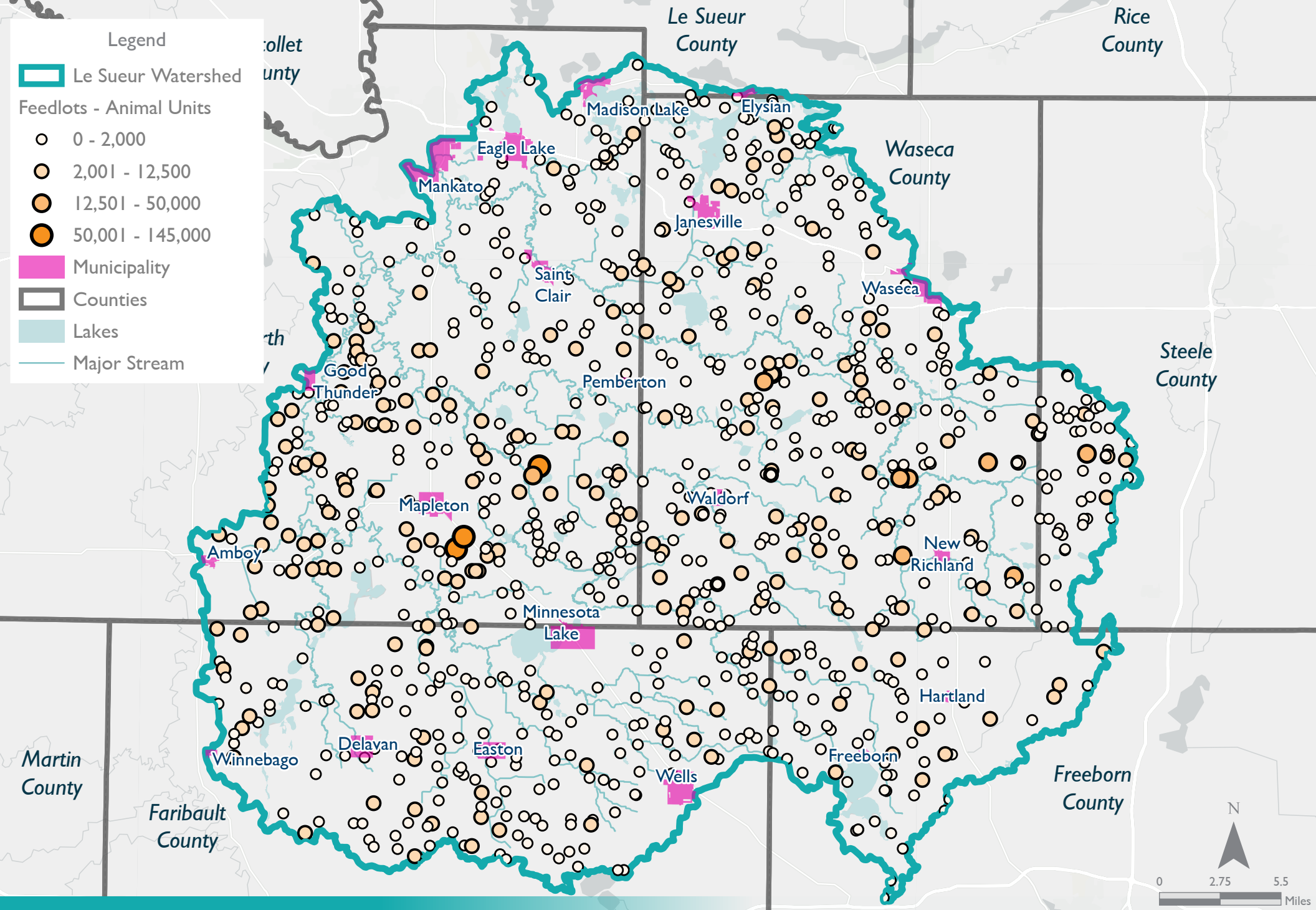


Figure 3.13: Bacteria Targeting Map

Reduced Riparian and Shoreland Habitat

Habitat loss, degradation, and fragmentation were noted as habitat concerns within the Watershed.

Issue Statement

A reduction in quality and quantity of riparian and shoreland habitat.

Measurable Goals

- Restore 700 linear feet of lake shoreland
- Complete four (4) streambank stabilization projects.
- Establish 7,570 acres of expanded perennial cover along lakeshore, river corridors, and both private and public ditches.

Desired Future Condition

All shorelands and riparian zones provide healthy habitat.

Targeting

This issue was developed with a focus on habitat and is not focused on bluff and bank erosion as those issues are addressed with other issue statements *(Figures 3.14-3.15)*. It is important to note, however, that the habitat projects completed through this issue statement are likely to be closely related to floodplain connectivity projects. The DNR Score Your Shore program will be used as a guidance tool for staff and landowners to determine targeted restoration areas as well as to provide measurements for success. Partners will also coordinate with local lake associations to promote and encourage participation in the Score Your Shore program. Whole lake assessments through the program will be considered as a part of these coordination efforts to promote ownership of the quality of the lake shoreland and encourage communities to work together to improve the conditions of the shoreland zone. For the purposes of this issue statement, upland habitat consists of any habitat work that occurs outside of the water, whereas aquatic habitat restoration will occur below the ordinary high-water level (OHW). While aquatic habitat restorations will be a component the riparian and shoreland issue, aquatic invasive species (AIS) management efforts were not identified as a priority for this plan. As a result, AIS management efforts will be supported by the Partnership as appropriate when efforts align with plan priorities. There are several datasets and tools to identify, assess, and evaluate habitat. Within the Watershed, there are critical habitat corridors where maintaining existing habitat is essential, along with identifying priority areas for habitat creation. Specific habitat considerations include those for birds, terrestrial species, and aquatic species. In addition, priority resources for water quality in rivers and streams and water quality in lakes are eligible for implementation actions under this issue statement as those actions incorporate a multiple benefit focus. Existing, permanently protected habitat areas that are eligible for restoration and enhancement resources include lands owned or easements held by the State of Minnesota, non-profit organizations, or counties, as well as other local jurisdictions. Areas that demonstrate a potential for priority critical habitat, but are not permanently protected, are eligible for protection as well as restoration and enhancement activities. These areas include migratory waterfowl feeding and resting areas, Minnesota County Biological Survey (MCBS) sites of biological significance, lakes of biological significance, designated wildlife lakes, locations with native plant communities, and locations identified by the DNR Wildlife Action Network. While not mapped, areas that connect or provide progress to connection of critical isolated patches of habitat or expand critical habitat areas are eligible as well. Finally, projects in Blue Earth County should utilize the Greenprint prioritization to assist with project selection.

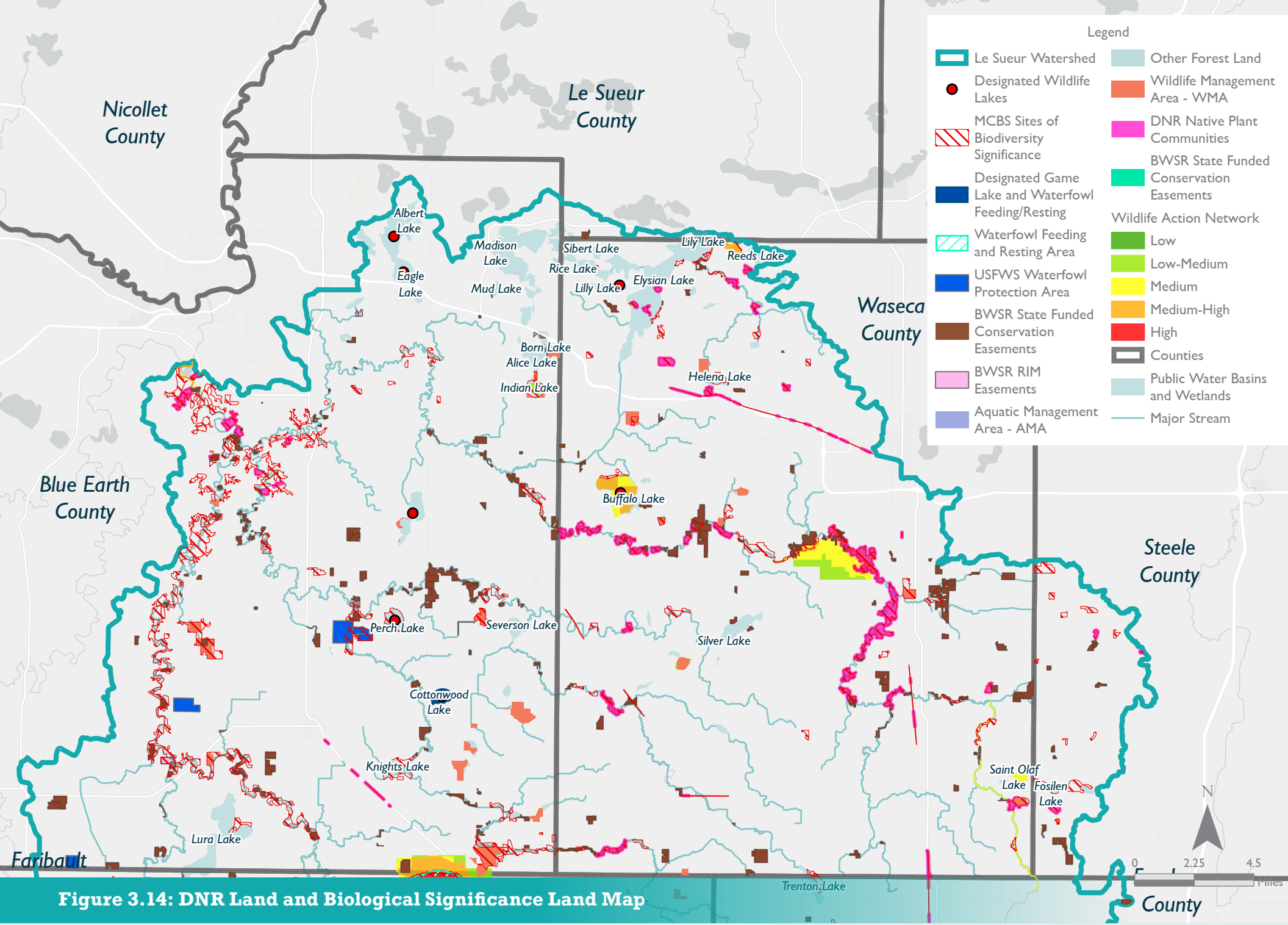


Figure 3.14: DNR Land and Biological Significance Land Map

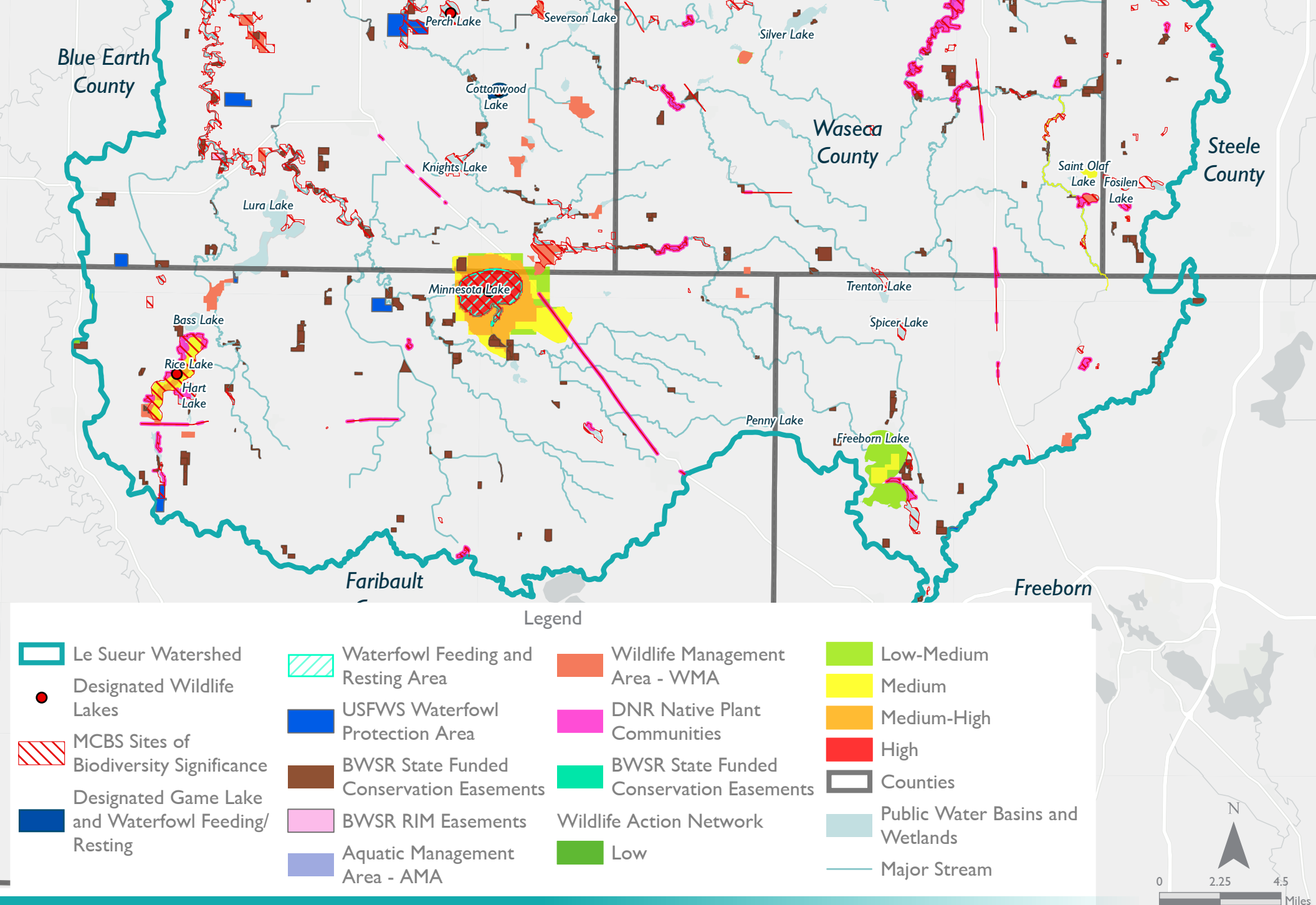


Figure 3.15: DNR Land and Biological Significance Land Map

Drinking Water and Groundwater Protection

Drinking water and groundwater protection is essential both within the Watershed and to downstream receiving waters, especially due to potential impacts to the City of Mankato's drinking water. This issue emphasizes impacts within Watershed as a focal point. Measurable goals were identified for both public water systems and private wells.

Issue Statement

The issue statement developed states that **elevated contaminants in groundwater, particularly nitrates and arsenic, are an ongoing threat to drinking water quality and public health**.

Desired Future Conditions

- All private well owners are aware of nitrate, arsenic, and manganese, its threats to their health, if it is detected in their water, and opportunities to treat it if present
- All unused and unsealed wells within Watershed sealed
- All SSTS operate as designed, meet compliance, and are maintained
- Leaky tank sites are eliminated
- Reduce impacts of elevated nitrates to Mankato's shallow drinking water wells

Measurable Goals

Public Water System

- 30 unused/abandoned wells are sealed within DWSMA boundaries
- Nitrate + Nitrite loads at the Le Sueur River outlet are reduced by 254,000 pounds per year (2% reduction)
- Cover crops or other living plant cover in medium or highly vulnerable DWSMAs encompass 80% (approximately 80 acres) of cropland acres.
- 1,500 acres of cover crops or other living plant cover in Mankato's Surface Water DSWMA.

Private Wells

- 296 unused or abandoned wells are sealed watershed wide
- 45 septic systems are replaced to meet compliance
- 10% of cropland acres implementing cover crops in moderate to highly sensitive well areas

Targeting

Criteria for both public water systems and private wells was used to identify priority, targeted areas for drinking water and groundwater protection. For public water systems, targeting criteria includes vulnerability ranking of drinking water supply management areas (DWSMAs), the City of Mankato drinking water supply management areas for surface water (DWSMA-SW), and subwatersheds that contribute the greatest nitrogen loads to the watershed outlet *(Figure 3.16)*. Targeting for well sealing is watershed wide due to the importance of sealing all entryways for contaminants into groundwater for protection of drinking water supply.

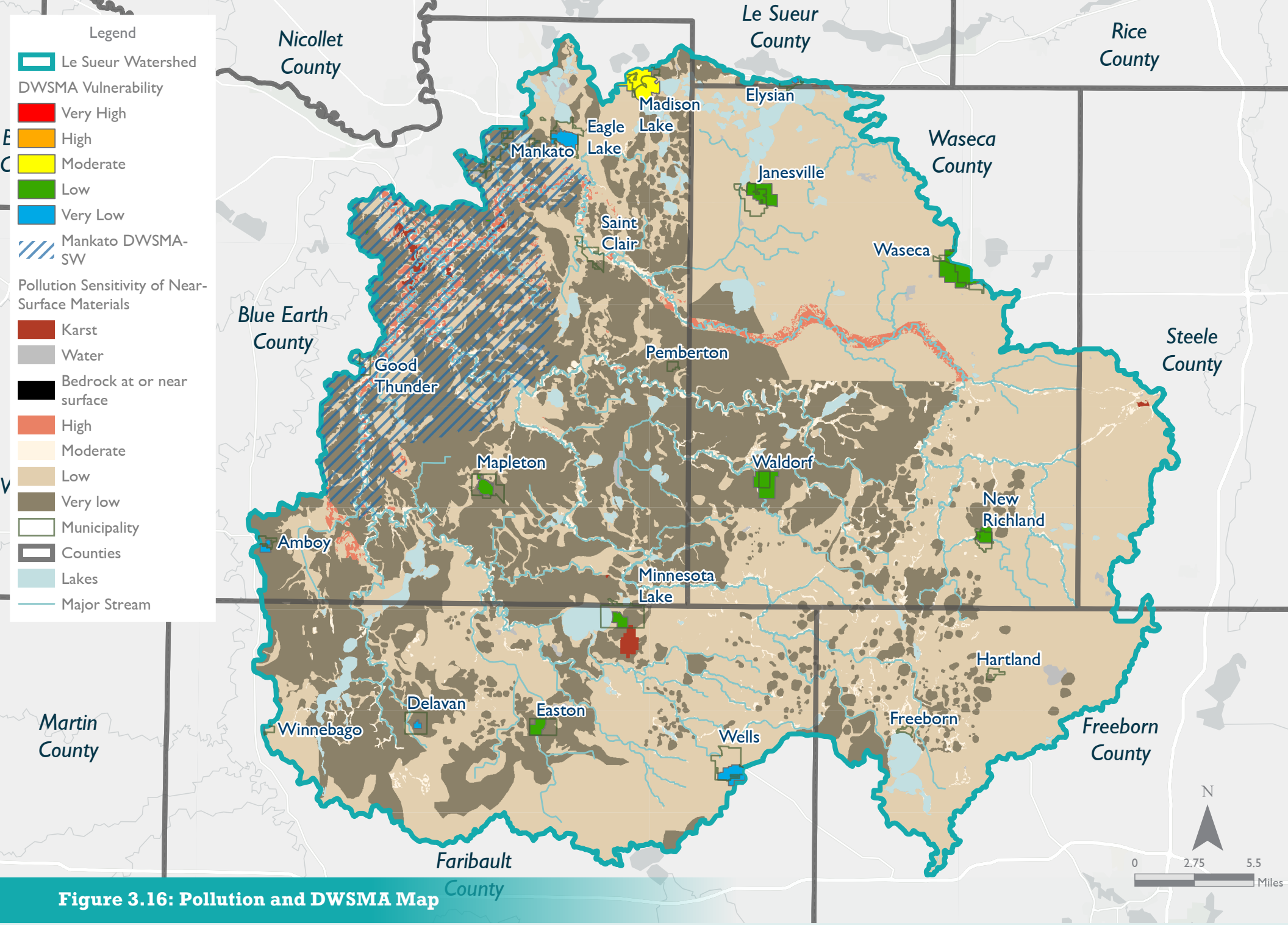


Figure 3.16: Pollution and DWSMA Map

Midpoint Public Engagement

Public Midpoint Meeting

The public midpoint meeting was held on April 4th, 2022, at Pemberton Main Street Plaza in Pemberton, Minnesota. The meeting was planned and hosted by WRC. Approximately 75 people attended the meeting, representing a variety of communities throughout the Watershed *(Figure 3.17)*. A copy of the full Midpoint Public Meeting Summary is in *Appendix G*. The content below reflects content from the summary document develop by the WRC *(WRC, 2022a)*.

The midpoint meeting was held to provide the public with an update on the planning process while also allowing interested parties to provide thoughts and insight to the framing of issue statements and other plan content. For the citizens that had also participated in the initial public kickoff meeting, this midpoint meeting also provided an opportunity to review how information from the kickoff meeting had been incorporated into plan content.

The Partnership, along with the WRC, started the meeting by welcoming the attendees, providing an overview of the One Watershed One Plan planning process, and describing the progress that had been made by the Partnership so far. Most of the meeting consisted of small group discussions that were facilitated by WRC staff and the Partnership, focusing on what strategies would be most successful for addressing the identified issues within the watershed.

Content for the meeting was developed based on the primary resource concerns and corresponding plan framework. During the meeting, attendees had the opportunity to provide input on two different resource concerns. To provide additional feedback, or to evaluate additional resource concerns, attendees were given the online survey link.

The WRC developed the following questions that were used for small group discussions. Small group discussions were led by the WRC and the Partnership.

75
Meeting attendees

1
In-person midpoint meeting

1
Online midpoint survey

Figure 3.17: Midpoint Meeting

Small Group Discussion Questions

Priority Areas

- Do you have any questions or concerns about the priority areas identified? This is a ten-year plan and state funding will be focused in these areas first.
- Do you suggest any changes? What would you change and why?

Strategies

- Broadly, do you think this list of strategies make sense? Are there any missing?
- What are your top 2-3 priority areas that you would like to see focused on?

Questions

- Do you have any other questions or concerns?

Support

- Overall, would you support this content moving forward?
- Do you have any questions or concerns?
- If you do not support the content as is, what would you like to see changed?

Feedback

When the WRC compiled the feedback received during the midpoint meeting, several main themes were apparent. Overall, the attendees supported the plan framework *(Figures 3.18-3.19)*. Some main themes from the meeting include:

Relationships, communication, and public involvement are essential.

Strategies for enhancing current efforts include:

- One-on-one connections, building relationships
- Landowners having input, being able to react to concepts presented
- Communication
- Supporting volunteer groups such as lake associations

Higher incentives are needed, many landowners will not implement conservation practices without larger incentives

Climate change

- There was a general awareness of climate change and a desire to ensure that impacts of climate changes are adequately captured within the plan

Education

- Educating the public is essential so the public is aware of how their actions can impact natural resources and the current condition of their local resources.
- Start at the basics of water resource education and build the level of knowledge as engagement efforts continue

Regulatory

- Some are in favor of increased regulation, stating that voluntary efforts have not been sufficient for achieving the level of conservation needed to improve and protect water resources
- Others are not in favor of increased regulation, and some believe that the current amount of regulation is too much

Water Storage

- Most are in favor of increased water storage efforts and understand the need for it
- A couple of responses received were not in favor of water storage efforts
- Innovative ideas for water storage are welcome
- Cover crops and constructed storage areas should both be considered as opportunities for increasing the amount of water storage in the watershed

Public Midpoint Survey

An online survey was also available to reach those who preferred to weigh in online, as well as those who attended the midpoint meeting and wanted to provide additional feedback. The survey was developed through a collaborative effort between the WRC and the Partnership to gain citizen input about watershed resource concerns. The survey utilized the same questions that were discussed at the in-person meeting to allow for data aggregation after the feedback was received. The survey consisted of 49 questions asking citizens to provide feedback and insight on any or all the resource concerns. It included both open and closed-ended questions to gain general input about citizen perspectives. The survey received 78 responses, most of which were residents from Waseca and Blue Earth counties, representing both rural and urban communities. The figures below capture the results of several survey questions as provided by WRC in Public Survey Summary (WRC, 2022b). A copy of the full Midpoint Public Survey Summary is in *Appendix G*.

78
Survey responses

49
Survey questions

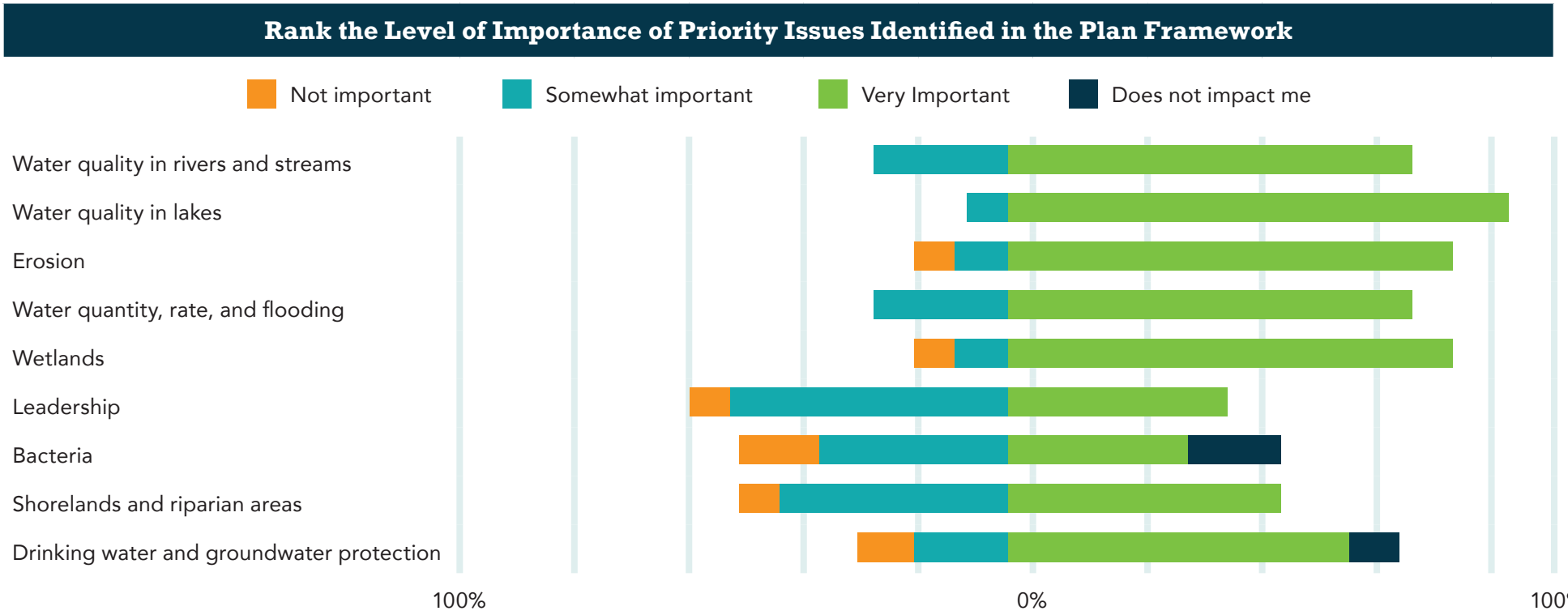


Figure 3.18: Survey Responses Ranking Level of Importance of Priority Issues Identified in the Plan Framework

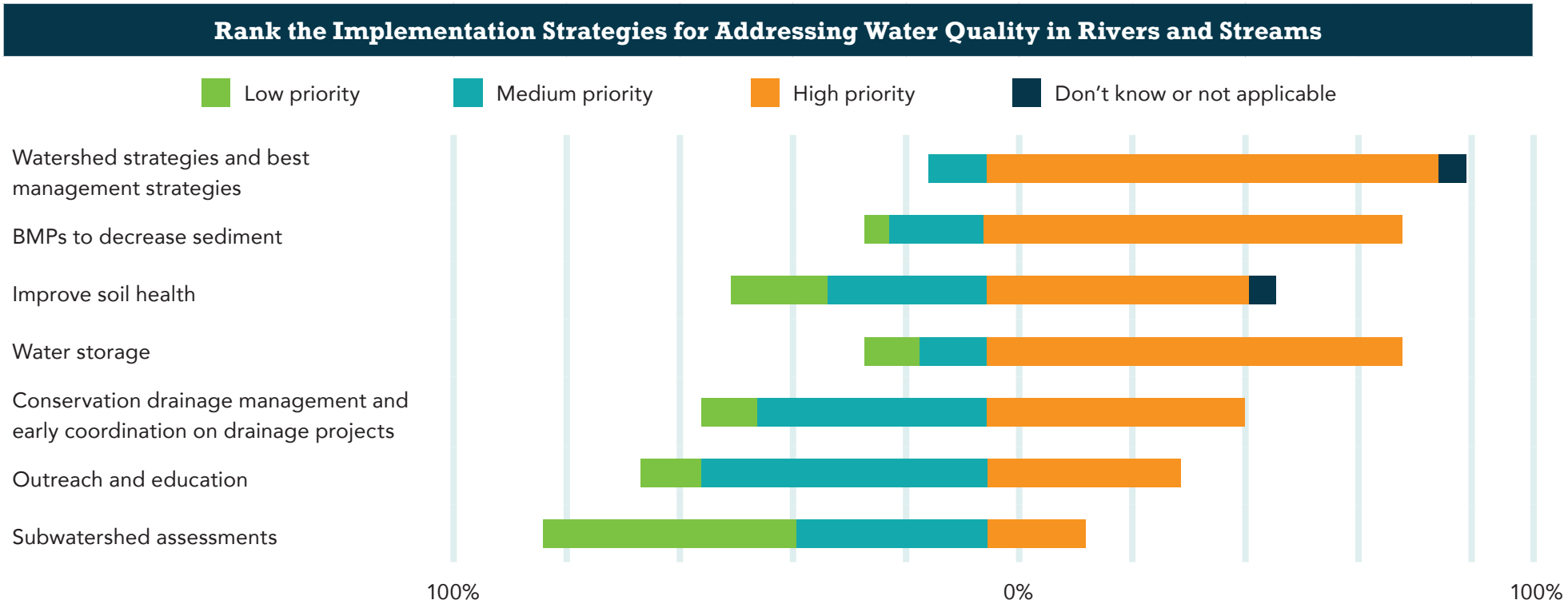


Figure 3.19: Priority Ranking of Implementation Strategies for Addressing Water Quality in Rivers and Streams from Survey Responses

The findings from the public midpoint meeting and corresponding survey were reviewed by the Steering Team and Technical Advisory committees. The results indicated that citizens who participated in providing input largely supported the Plan framework. Feedback received placed emphasis on the need for one-on-one landowner outreach and education and water storage. Feedback was incorporated into the outreach and education program of the Plan and the water storage components of the capital improvement project section.

04

IMPLEMENTATION SCHEDULES

Did you know?

The goal of the implementation plan was to establish a plan that is realistic and achievable with a consistent review of efforts identified.

IMPLEMENTATION SCHEDULES

Introduction

The Plan has three different implementation schedules, organized by the following categories:

- BMPs
- Outreach and Education
- Data, Studies, and Monitoring

The BMP Implementation Schedule

The implementation schedule for BMPs is organized and separated by practice/BMP type. Within each practice type, efforts are separated by management zone, and each management zone identifies the area or resource(s) that will be targeted by the action. The implementation schedule also details what actions will be implemented, when, by whom, and the estimated costs. Additional details for BMP descriptions can be found in *Appendix E*.

The Outreach and Education Implementation Schedule

The outreach and education implementation schedule contains items that go above and beyond basic outreach efforts to enroll landowners in programs and practice implementation. While landowner participation in projects and practices is a goal of the action items in this table, the goals extend past that with a focus on having one-on-one conversations, building relationships, and providing educational opportunities for the public. Providing these opportunities will encourage an overall conservation-based mindset for individuals, which is more likely to create behavior changes that benefit the Watershed's natural resources. This implementation schedule also details what actions will be implemented, when they will be implemented, which local government unit will lead the effort, and the estimated costs.

The Data, Studies, and Monitoring Implementation Schedule

The data, studies, and monitoring implementation schedule contains items that would address current data gaps and provide feasibility documentation to provide the information necessary for the partners to effectively achieve the goals identified in this plan. This implementation schedule also details what actions will be implemented, when the actions will occur, which local government unit will lead the effort, and the estimated costs.

The Process

The process used to develop the implementation schedules began with, first, identifying strategies to address issues during the issue framework development. The strategies were then expanded into detailed actions.

The goal of the Steering Team was to establish a plan that was realistic and achievable, which involved consistent review of efforts identified. To accomplish this, an iterative approach was used that balanced:

- Expected staff capacity
- Funding
- Resulting measurable goals

Details on the targeting process for each issue statement are described in *Section 3*.

Cost Estimates

Cost estimates are presented in 2022 value and will be updated to reflect the current costs during the development of the annual work plan. Unless otherwise noted, on-the-ground implementation actions include the costs for:

- Project specific technical assistance
- Basic outreach efforts
- Design
- Permitting
- Easements
- Landowner contribution
- Other direct project related costs

Cost estimate details for BMPs can be found in *Appendix E*.

Prioritized Projects

BMP projects will be prioritized for work planning and funding prior to implementation. Prioritization will be based on estimated reductions to priority waterbodies and top priority issues.

Targeting

The selection of priority areas for implementation was guided by the targeting criteria that was defined for each issue in the issue framework as defined in Section 3 of this plan. Examples of targeting criteria include but are not limited to:

- Known stressors for an issue
  i.e. areas or sources of high sediment loads
- Drainage areas for priority resources
- Landscape characteristics that make implementation actions suitable
  i.e. depressional areas and hydric soils for wetland restorations

The locations of the targeting criteria were aggregated into one map to identify which subwatershed overlapped the different issue's targeting criteria. Subwatersheds that overlapped more of the targeting criteria were identified as priority areas for implementation to focus on addressing multiple benefits. The targeting criteria from the top three priority issues were used for this analysis which are:

- Water quality in rivers and streams
- Water quality in lakes
- Increased erosion

These top three priority resource concerns drive the primary targeting of implementation actions across the entire planning area. The targeting criteria for the remaining priority resource concerns (Water Quantity Rate and Flooding; Loss of Wetlands; Leadership, Public Relationships, and Education; Excess Bacteria in Surface Waters; Reduced Riparian and Shoreland Habitat; and Drinking Water and Groundwater Protection) will be used during work planning to target site specific locations within the priority subwatersheds.

The outcomes of this approach are presented in *Figure 4.1* which displays how many of the top three priority resource concerns are targeted for a given subwatershed. The intentions of this priority ranking approach is to first target efforts towards the subwatersheds that overlap targeting criteria for the most priority issues then work down the ranking. This approach allows flexibility by providing a roadmap to select areas throughout the watershed if opportunities to implement projects in higher priority subwatersheds are not available when developing a work plan.

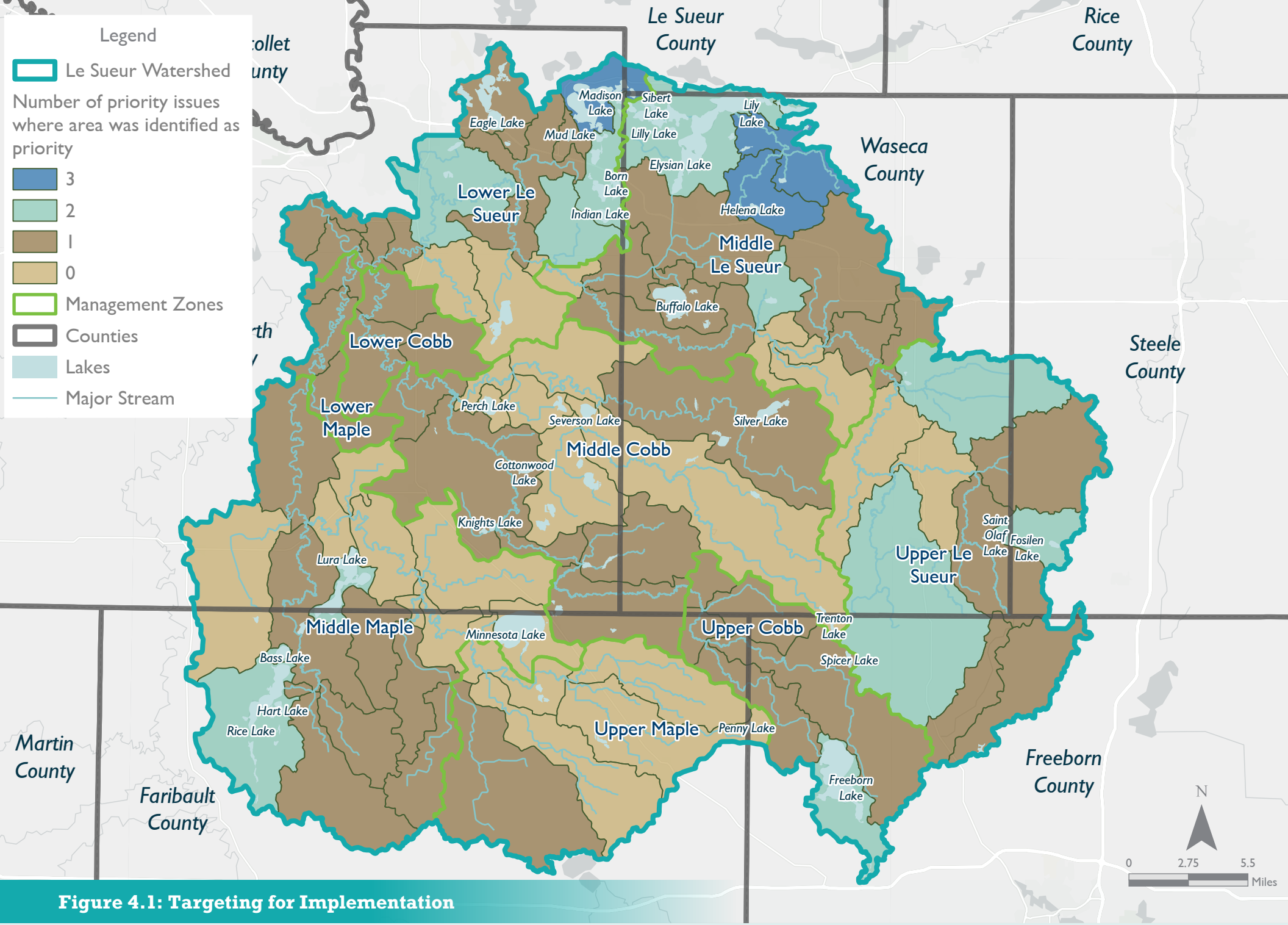


Figure 4.1: Targeting for Implementation

Modeling Approach

The values presented in the implementation tables were developed using the Le Sueur River Watershed HSPF model that was extended and calibrated in 2022. The HSPF model simulates pollutant loading from the landscape and in-stream processes for the entire Watershed with simulated pollutant values being calibrated to observed water quality data at key monitoring locations throughout the Watershed and at the Le Sueur River outlet.

Pollutant reductions for the planned implementation actions were generated by using the Scenario Application Model (SAM) software which allows the user to create scenarios through changing land uses and adding BMPs to treat a specified land use type and area. These scenarios were developed by applying BMPs in the targeted subwatersheds identified in *Figures 4.1*. The BMPs and associated costs were entered into SAM to simulate pollutant reductions and assess the cost effectiveness of the BMPs. Adjustments were made to the implementation actions by the Steering Team to better reflect staff capacity and landowner willingness to adopt practices.

One limitation of HSPF–SAM was the ability to model bank and bluff erosion, one of the major sediment sources of the Le Sueur River. MOSM was used to model the implementation action and correlated reduction in near channel sources which includes ravine, bank, bluff erosion. MOSM was developed through intensive research and monitoring in correlation with the development of the integrated sediment budget where sediment source allocations were determined. Based on the findings, the goal of MOSM is to determine the most cost-effective management options for sediment reductions within the Watershed (Gran et al, 2011). The outcomes of the MOSM tool's cost-effective management options were used early in the planning process to guide the general distribution and scale of efforts and type of actions across the watershed. Later in the planning process the tool was used to determine measurable goals outlined for resource concern related to increased erosion.

Implementation Schedules

The activities are organized into three implementation tables:

- Best Management Practices
- Outreach and Eduction
- Data, Studies, and Monitoring

The BMPs make up the bulk of the implementation efforts. The BMP table is organized by each type of BMP noted. The BMPs and other implementation tables outlined contain the following information:

Item ID

Each activity in the implementation tables are assigned a unique identifier.

Location

The implementation table is organized into the three main drainage areas:

- Maple River
- Cobb River
- Le Sueur River

Each of these tributaries has a lower, middle, and upper zone which make up the nine management zones for the Plan *(Figure 4.1)*. These management zones were determined due to their landscape and geomorphic characteristics and largely correlate with the management option boundaries in MOSM. The implementation table aggregates the implementation actions into these nine management zones while the implementation location follows the targeted prioritization approach outlined above *(Figure 4.2)*.

Lower

- Area known for largest contributing sources of ravine and bluff erosion
- Deeply incised river valleys with disconnected floodplains

Middle

- Area between the lower and upper zones known as the transitional zone

Upper

- Relatively flat topography

Headwaters of rivers and streams

Targeted Area and/or Resource

This field identifies the physical area or resource where the implementation activity will take place. Some activities are watershed wide. This field may refer to targeting maps that are identified in maps throughout the report.

Measurable output for this activity

This field identifies how performance of the implementation activity will be measured. Pollution reduction estimates may be included for some activities while some will be measured through widgets.

Timeframe

These fields indication when an implementation activity will take place. The 10-year timeframe is subdivided into two-year periods. Expected outputs and costs are included for each two-year period.

Estimated Cost

This field represent the total estimated cost to implement the activity over the 10-year lifetime of the Plan. Please refer to the Cost Estimate section in this Section for more details on how costs were determined.

Lead LGU

This field indicates the entity responsible for leading each activity. The lead LGU may not necessarily complete the activity, but is responsible for delegating and managing completion of the activity through the Plan.

Support

This field identifies anticipated entities, organizations, or agencies expected to cooperate, review, fund, regulate, or in other ways assist with implementation efforts. Supporting entities identified for an activity may not be limited to those included in the implementation tables.

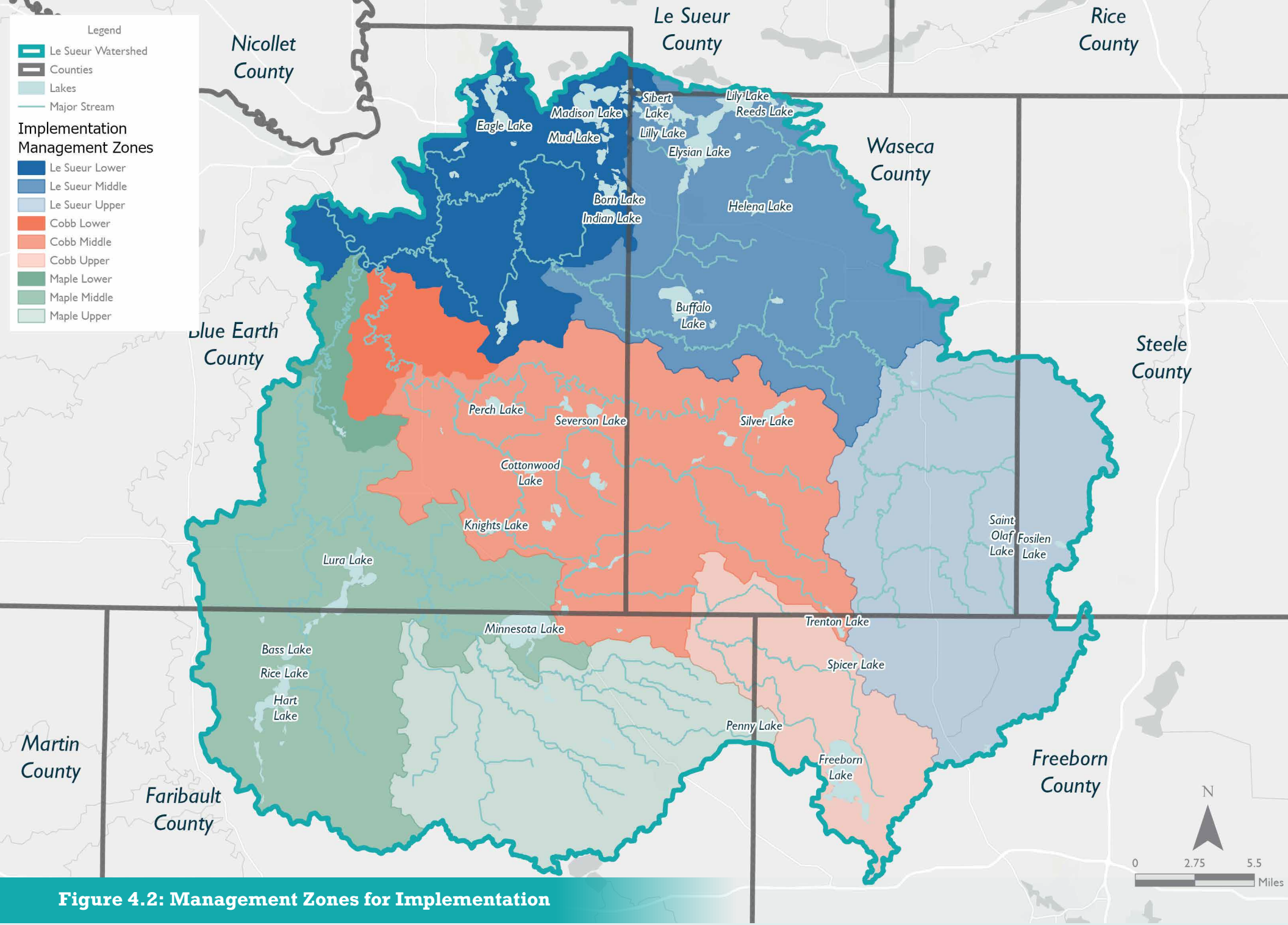


Figure 4.2: Management Zones for Implementation

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
Cover Crops												
BMP 1.1	Upper Le Sueur River Management Zone (114,606 acres)	Priority HSPF Subwatersheds	Implement 2,900 acres of newly enrolled land that results in a reduction of: • 280 tons of TSS/yr • 23,700 lbs TN/yr • 730 lbs TP/yr	$120,400 (290 acres)	$240,800 (580 acres)	$240,800 (580 acres)	$240,800 (580 acres)	$361,200 (870 acres)	$1,204,000	Waseca SWCD Freeborn SWCD	Waseca (52%) Freeborn (28%)	—
BMP 1.2	Middle Le Sueur River Management Zone (104,689 acres)	Priority HSPF Subwatersheds	Implement 2,500 acres of newly enrolled land that results in a reduction of: • 240 tons of TSS/yr • 18,300 lbs TN/yr • 540 lbs TP/yr	$103,200 (250 acres)	$206,400 (500 acres)	$206,400 (500 acres)	$206,400 (500 acres)	$309,600 (750 acres)	$1,032,000	Waseca SWCD Blue Earth SWCD	Waseca (92%) Blue Earth (6%)	—
BMP 1.3	Lower Le Sueur River Management Zone (74,894 acres)	Priority HSPF Subwatersheds	Implement 1,400 acres of newly enrolled land that results in a reduction of: • 140 tons of TSS/yr • 10,000 lbs TN/yr • 320 lbs TP/yr	$57,400 (140 acres)	$114,800 (280 acres)	$114,800 (280 acres)	$114,800 (280 acres)	$172,200 (420 acres)	$574,000	Blue Earth SWCD	Blue Earth (98%) Waseca (1%)	—
BMP 1.4	Upper Cobb River Management Zone (46,617 acres)	Priority HSPF Subwatersheds	Implement 1,300 acres of newly enrolled land that results in a reduction of: • 60 tons of TSS/yr • 11,300 lbs TN/yr • 320 lbs TP/yr	$56,400 (130 acres)	$112,800 (260 acres)	$112,800 (260 acres)	$112,800 (260 acres)	$169,200 (390 acres)	$564,000	Freeborn SWCD	Freeborn (75%) Faribault (13%) Waseca (12%)	—
BMP 1.5	Middle Cobb River Management Zone (134,787 acres)	Priority HSPF Subwatersheds	Implement 2,400 acres of newly enrolled land that results in a reduction of: • 110 tons of TSS/yr • 16,400 lbs TN/yr • 400 lbs TP/yr	$100,600 (240 acres)	$201,200 (480 acres)	$201,200 (480 acres)	$201,200 (480 acres)	$301,800 (720 acres)	$1,006,000	Blue Earth SWCD Waseca SWCD	Blue Earth (48%) Waseca (47%) Faribault (4%) Freeborn (1%)	Faribault SWCD Freeborn SWCD
BMP 1.6	Lower Cobb River Management Zone (17,044 acres)	Priority HSPF Subwatersheds	Implement 500 acres of newly enrolled land that results in a reduction of: • 20 tons of TSS/yr • 3,400 lbs TN/yr • 80 lbs TP/yr	$20,500 (50 acres)	$41,000 (100 acres)	$41,000 (100 acres)	$41,000 (100 acres)	$61,500 (150 acres)	$205,000	Blue Earth SWCD	Blue Earth (100%)	—
BMP 1.7	Upper Maple River Management Zone (67,864 acres)	Priority HSPF Subwatersheds	Implement 3,900 acres of newly enrolled land that results in a reduction of: • 110 tons of TSS/yr • 22,700 lbs TN/yr • 590 lbs TP/yr	$163,100 (390 acres)	$326,200 (780 acres)	$326,200 (780 acres)	$326,200 (780 acres)	$489,300 (1170 acres)	$1,631,000	Faribault SWCD	Faribault (98%) Freeborn (2%)	—

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
Cover Crops (Continued)												
BMP 1.8	Middle Maple River Management Zone (139,792 acres)	Priority HSPF Subwatersheds	Implement 2,100 acres of newly enrolled land that results in a reduction of: • 80 tons of TSS/yr • 12,500 lbs TN/yr • 350 lbs TP/yr	$88,800 (210 acres)	$177,600 (420 acres)	$177,600 (420 acres)	$177,600 (420 acres)	$266,400 (630 acres)	$888,000	Faribault SWCD, Blue Earth SWCD	Faribault (56%) Blue Earth (44%)	—
BMP 1.9	Lower Maple River Management Zone (11,325 acres)	Priority HSPF Subwatersheds	Implement 300 acres of newly enrolled land that results in a reduction of: • 10 tons of TSS/yr • 1,800 lbs TN/yr • 50 lbs TP/yr	$11,700 (30 acres)	$23,400 (60 acres)	$23,400 (60 acres)	$23,400 (60 acres)	$35,100 (90 acres)	$117,000	Blue Earth SWCD	Blue Earth (100%)	—
Conservation Tillage (No till or strip till w/ high residue)												
BMP 2.1	Upper Le Sueur River Management Zone (114,606 acres)	Priority HSPF Subwatersheds	Implement 3,400 acres that result in a reduction of: • 360 tons of TSS/yr • 16,500 lbs TN/yr • 2,050 lbs TP/yr	$76,100 (340 acres)	$152,200 (680 acres)	$152,200 (680 acres)	$152,200 (680 acres)	$228,300 (1020 acres)	$761,000	Waseca SWCD, Freeborn SWCD	Waseca (52%) Freeborn (28%)	—
BMP 2.2	Middle Le Sueur River Management Zone (104,689 acres)	Priority HSPF Subwatersheds	Implement 1,900 acres that result in a reduction of: • 200 tons of TSS/yr • 8,700 lbs TN/yr • 960 lbs TP/yr	$43,200 (190 acres)	$86,400 (380 acres)	$86,400 (380 acres)	$86,400 (380 acres)	$129,600 (570 acres)	$432,000	Waseca SWCD, Blue Earth SWCD	Waseca (92%) Blue Earth (6%)	—
BMP 2.3	Lower Le Sueur River Management Zone (74,894 acres)	Priority HSPF Subwatersheds	Implement 2,000 acres that result in a reduction of: • 230 tons of TSS/yr • 8,800 lbs TN/yr • 1,150 lbs TP/yr	$44,400 (200 acres)	$88,800 (400 acres)	$88,800 (400 acres)	$88,800 (400 acres)	$133,200 (600 acres)	$444,000	Blue Earth SWCD	Blue Earth (98%) Waseca (1%)	—
BMP 2.4	Upper Cobb River Management Zone (46,617 acres)	Priority HSPF Subwatersheds	Implement 2,000 acres that result in a reduction of: • 90 tons of TSS/yr • 8,600 lbs TN/yr • 1,100 lbs TP/yr	$44,600 (200 acres)	$89,200 (400 acres)	$89,200 (400 acres)	$89,200 (400 acres)	$133,800 (600 acres)	$446,000	Freeborn SWCD	Freeborn (75%) Faribault (13%) Waseca (12%)	—
BMP 2.5	Middle Cobb River Management Zone (134,787 acres)	Priority HSPF Subwatersheds	Implement 2,600 acres that result in a reduction of: • 120 tons of TSS/yr • 9,300 lbs TN/yr • 930 lbs TP/yr	$57,400 (260 acres)	$114,800 (520 acres)	$114,800 (520 acres)	$114,800 (520 acres)	$172,200 (780 acres)	$574,000	Blue Earth SWCD, Waseca SWCD	Blue Earth (48%) Waseca (47%) Faribault (4%) Freeborn (1%)	—

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
Conservation Tillage (No till or strip till w/ high residue) (Continued)												
BMP 2.6	Lower Cobb River Management Zone (17,044 acres)	Priority HSPF Subwatersheds	Implement 700 acres that result in a reduction of: • 30 tons of TSS/yr • 2,400 lbs TN/yr • 250 lbs TP/yr	$14,800 (70 acres)	$29,600 (140 acres)	$29,600 (140 acres)	$29,600 (140 acres)	$44,400 (210 acres)	$148,000	Blue Earth SWCD	Blue Earth (100%)	—
BMP 2.7	Upper Maple River Management Zone (67,864 acres)	Priority HSPF Subwatersheds	Implement 1,700 acres that result in a reduction of: • 50 tons of TSS/yr • 5,300 lbs TN/yr • 630 lbs TP/yr	$38,200 (170 acres)	$76,400 (340 acres)	$76,400 (340 acres)	$76,400 (340 acres)	$114,600 (510 acres)	$382,000	Faribault SWCD	Faribault (98%) Freeborn (2%)	—
BMP 2.8	Middle Maple River Management Zone (139,792 acres)	Priority HSPF Subwatersheds	Implement 3,200 acres that result in a reduction of: • 170 tons of TSS/yr • 11,500 lbs TN/yr • 1,550 lbs TP/yr	$71,700 (320 acres)	$143,400 (640 acres)	$143,400 (640 acres)	$143,400 (640 acres)	$215,100 (960 acres)	$717,000	Faribault SWCD, Blue Earth SWCD	Faribault (56%) Blue Earth (44%)	—
BMP 2.9	Lower Maple River Management Zone (11,325 acres)	Priority HSPF Subwatersheds	Implement 400 acres that result in a reduction of: • 30 tons of TSS/yr • 1,700 lbs TN/yr • 240 lbs TP/yr	$9,700 (40 acres)	$19,400 (80 acres)	$19,400 (80 acres)	$19,400 (80 acres)	$29,100 (120 acres)	$97,000	Blue Earth SWCD	Blue Earth (100%)	—
Crop Rotation (Third Crop)												
BMP 3.1	Upper Le Sueur River Management Zone (114,606 acres)	Priority HSPF Subwatersheds	Implement 180 acres that result in a reduction of: • 10 tons of TSS/yr • 2,400 lbs TN/yr • 60 lbs TP/yr	$2,600 (18 acres)	$5,200 (36 acres)	$5,200 (36 acres)	$5,200 (36 acres)	$7,800 (54 acres)	$26,000	Waseca SWCD Freeborn SWCD	Waseca (52%) Freeborn (28%)	—
BMP 3.2	Middle Le Sueur River Management Zone (104,689 acres)	Priority HSPF Subwatersheds	Implement 50 acres that result in a reduction of: • 3 tons of TSS/yr • 500 lbs TN/yr • 10 lbs TP/yr	$700 (5 acres)	$1,400 (10 acres)	$1,400 (10 acres)	$1,400 (10 acres)	$2,100 (15 acres)	$7,000	Waseca SWCD Blue Earth SWCD	Waseca (92%) Blue Earth (6%)	—
BMP 3.3	Lower Le Sueur River Management Zone (74,894 acres)	Priority HSPF Subwatersheds	Implement 70 acres that result in a reduction of: • 10 tons of TSS/yr • 700 lbs TN/yr • 20 lbs TP/yr	$1,000 (7 acres)	$2,000 (14 acres)	$2,000 (14 acres)	$2,000 (14 acres)	$3,000 (21 acres)	$10,000	Blue Earth SWCD	Blue Earth (98%) Waseca (1%)	—
BMP 3.4	Middle Cobb River Management Zone (134,787 acres)	Priority HSPF Subwatersheds	Implement 80 acres that result in a reduction of: • 3 tons of TSS/yr • 800 lbs TN/yr • 20 lbs TP/yr	$1,100 (8 acres)	$2,200 (16 acres)	$2,200 (16 acres)	$2,200 (16 acres)	$3,300 (24 acres)	$11,000	Blue Earth SWCD Waseca SWCD	Blue Earth (48%) Waseca (47%) Faribault (4%) Freeborn (1%)	—

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
Crop Rotation (Third Crop) (Continued)												
BMP 3.5	Upper Maple River Management Zone (67,864 acres)	Priority HSPF Subwatersheds	Implement 90 acres that result in a reduction of: • 2 tons of TSS/yr • 800 lbs TN/yr • 20 lbs TP/yr	$1,300 (9 acres)	$2,600 (18 acres)	$2,600 (18 acres)	$2,600 (18 acres)	$3,900 (27 acres)	$13,000	Faribault SWCD	Faribault (98%) Freeborn (2%)	—
BMP 3.6	Middle Maple River Management Zone (139,792 acres)	Priority HSPF Subwatersheds	Implement 50 acres that result in a reduction of: • 1 ton of TSS/yr • 300 lbs TN/yr • 10 lbs TP/yr	$700 (5 acres)	$1,400 (10 acres)	$1,400 (10 acres)	$1,400 (10 acres)	$2,100 (15 acres)	$7,000	Faribault SWCD Blue Earth SWCD	Faribault (56%) Blue Earth (44%)	—
Grassed Waterways												
BMP 4.1	Upper Le Sueur River Management Zone (114,606 acres)	Priority HSPF Subwatersheds	Implement 65,000 acres that result in a reduction of: 430 tons of TSS/yr 11,400 lbs TN/yr 2,070 lbs TP/yr	$32,500 (6500 linear ft.)	$65,000 (13000 linear ft.)	$65,000 (13000 linear ft.)	$65,000 (13000 linear ft.)	$97,500 (19500 linear ft.)	$325,000	Waseca County, Waseca SWCD, Freeborn County, Freeborn SWCD	Waseca (52%) Freeborn (28%)	—
BMP 4.2	Middle Le Sueur River Management Zone (104,689 acres)	Priority HSPF Subwatersheds	Implement 50,600 acres that result in a reduction of: 330 tons of TSS/yr 8,100 lbs TN/yr 1,350 lbs TP/yr	$25,300 (5060 linear ft.)	$50,600 (10120 linear ft.)	$50,600 (10120 linear ft.)	$50,600 (10120 linear ft.)	$75,900 (15180 linear ft.)	$253,000	Waseca County, Waseca SWCD, Blue Earth County, Blue Earth SWCD	Waseca (92%) Blue Earth (6%)	—
BMP 4.3	Lower Le Sueur River Management Zone (74,894 acres)	Priority HSPF Subwatersheds	Implement 21,900 acres that result in a reduction of: 150 tons of TSS/yr 3,400 lbs TN/yr 610 lbs TP/yr	$10,900 (2190 linear ft.)	$21,800 (4380 linear ft.)	$21,800 (4380 linear ft.)	$21,800 (4380 linear ft.)	$32,700 (6570 linear ft.)	$109,000	Blue Earth County, Blue Earth SWCD	Blue Earth (98%) Waseca (1%)	—
BMP 4.4	Upper Cobb River Drainage Management Zone (46,617 acres)	Priority HSPF Subwatersheds	Implement 26,900 acres that result in a reduction of: 80 tons of TSS/yr 3,900 lbs TN/yr 780 lbs TP/yr	$13,400 (2690 linear ft.)	$26,800 (5380 linear ft.)	$26,800 (5380 linear ft.)	$26,800 (5380 linear ft.)	$40,200 (8070 linear ft.)	$134,000	Freeborn County, Freeborn SWCD	Freeborn (75%) Faribault (13%) Waseca (12%)	—
BMP 4.5	Middle Cobb River Drainage Management Zone (134,787 acres)	Priority HSPF Subwatersheds	Implement 34,900 acres that result in a reduction of: 100 tons of TSS/yr 4,200 lbs TN/yr 710 lbs TP/yr	$17,500 (3490 linear ft.)	$35,000 (6980 linear ft.)	$35,000 (6980 linear ft.)	$35,000 (6980 linear ft.)	$52,500 (10470 linear ft.)	$175,000	Blue Earth County, Blue Earth SWCD, Waseca County, Waseca SWCD	Blue Earth (48%) Waseca (47%) Faribault (4%) Freeborn (1%)	—
BMP 4.6	Lower Cobb River Drainage Management Zone (17,044 acres)	Priority HSPF Subwatersheds	Implement 7,500 acres that result in a reduction of: 20 tons of TSS/yr 900 lbs TN/yr 150 lbs TP/yr	$3,700 (750 linear ft.)	$7,400 (1500 linear ft.)	$7,400 (1500 linear ft.)	$7,400 (1500 linear ft.)	$11,100 (2250 linear ft.)	$37,000	Blue Earth County, Blue Earth SWCD	Blue Earth (100%)	—

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
Grassed Waterways (Continued)												
BMP 4.7	Upper Maple River Drainage Management Zone (67,864 acres)	Priority HSPF Subwatersheds	Implement 9,400 acres that result in a reduction of: 40 tons of TSS/yr 2,400 lbs TN/yr 430 lbs TP/yr	$7,500 (940 linear ft.)	$15,000 (1880 linear ft.)	$15,000 (1880 linear ft.)	$15,000 (1880 linear ft.)	$22,500 (2820 linear ft.)	$75,000	Faribault County, Faribault SWCD	Faribault (98%) Freeborn (2%)	—
BMP 4.8	Middle Maple River Drainage Management Zone (139,792 acres)	Priority HSPF Subwatersheds	Implement 32,800 acres that result in a reduction of: 100 tons of TSS/yr 3,900 lbs TN/yr 780 lbs TP/yr	$16,400 (3280 linear ft.)	$32,800 (6560 linear ft.)	$32,800 (6560 linear ft.)	$32,800 (6560 linear ft.)	$49,200 (9840 linear ft.)	$164,000	Faribault County, Faribault SWCD, Blue Earth County, Blue Earth SWCD	Faribault (56%) Blue Earth (44%)	—
BMP 4.9	Lower Maple River Drainage Management Zone (11,325 acres)	Priority HSPF Subwatersheds	Implement 3,900 acres that result in a reduction of: 10 tons of TSS/yr 500 lbs TN/yr 110 lbs TP/yr	$1,900 (390 linear ft.)	$3,800 (780 linear ft.)	$3,800 (780 linear ft.)	$3,800 (780 linear ft.)	$5,700 (1170 linear ft.)	$19,000	Blue Earth County, Blue Earth SWCD	Blue Earth (100%)	—
WASCOBs and Terraces												
BMP 5.1	Upper Le Sueur River Management Zone (114,606 acres)	Priority HSPF Subwatersheds	Implement 21 projects that result in reduction of: • 30 tons of TSS/yr • 1,500 lbs TN/yr • 160 lbs TP/yr	$30,000 (2 projects)	$60,000 (4 projects)	$60,000 (4 projects)	$75,000 (5 projects)	$90,000 (6 projects)	$315,000	Waseca SWCD Freeborn SWCD	Waseca (52%) Freeborn (28%)	—
BMP 5.2	Middle Le Sueur River Management Zone (104,689 acres)	Priority HSPF Subwatersheds	Implement 13 projects that result in reduction of: • 10 tons of TSS/yr • 800 lbs TN/yr • 80 lbs TP/yr	$15,000 (1 projects)	$45,000 (3 projects)	$45,000 (3 projects)	$45,000 (3 projects)	$45,000 (3 projects)	$195,000	Waseca SWCD Blue Earth SWCD	Waseca (92%) Blue Earth (6%)	—
BMP 5.3	Lower Le Sueur River Management Zone (74,894 acres)	Priority HSPF Subwatersheds	Implement 7 projects that result in reduction of: • 10 tons of TSS/yr • 400 lbs TN/yr • 50 lbs TP/yr	$15,000 (1 projects)	$15,000 (1 projects)	$15,000 (1 projects)	$30,000 (2 projects)	$30,000 (2 projects)	$105,000	Blue Earth SWCD	Blue Earth (98%) Waseca (1%)	—
BMP 5.4	Upper Cobb River Management Zone (46,617 acres)	Priority HSPF Subwatersheds	Implement 9 projects that result in reduction of: • 10 tons of TSS/yr • 500 lbs TN/yr • 60 lbs TP/yr	$15,000 (1 projects)	$30,000 (2 projects)	$30,000 (2 projects)	$30,000 (2 projects)	$30,000 (2 projects)	$135,000	Freeborn SWCD	Freeborn (75%) Faribault (13%) Waseca (12%)	—

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
WASCOBs and Terraces (Continued)												
BMP 5.5	Middle Cobb River Management Zone (134,787 acres)	Priority HSPF Subwatersheds	Implement 11 projects that result in reduction of: • 10 tons of TSS/yr • 600 lbs TN/yr • 60 lbs TP/yr	$15,000 (1 projects)	$30,000 (2 projects)	$30,000 (2 projects)	$45,000 (3 projects)	$45,000 (3 projects)	$165,000	Blue Earth SWCD Waseca SWCD	Blue Earth (48%) Waseca (47%) Faribault (4%) Freeborn (1%)	—
BMP 5.6	Lower Cobb River Management Zone (17,044 acres)	Priority HSPF Subwatersheds	Implement 2 projects that result in reduction of: • 1 tons of TSS/yr • 100 lbs TN/yr • 10 lbs TP/yr				$15,000 (1 projects)	$15,000 (1 projects)	$30,000	Blue Earth SWCD	Blue Earth (100%)	—
BMP 5.7	Upper Maple River Management Zone (67,864 acres)	Priority HSPF Subwatersheds	Implement 7 projects that result in reduction of: • 2 tons of TSS/yr • 300 lbs TN/yr • 30 lbs TP/yr	$15,000 (1 projects)	$15,000 (1 projects)	$15,000 (1 projects)	$30,000 (2 projects)	$30,000 (2 projects)	$105,000	Faribault SWCD	Faribault (98%) Freeborn (2%)	—
BMP 5.8	Middle Maple River Management Zone (139,792 acres)	Priority HSPF Subwatersheds	Implement 11 projects that result in reduction of: • 10 tons of TSS/yr • 500 lbs TN/yr • 60 lbs TP/yr	$15,000 (1 projects)	$30,000 (2 projects)	$30,000 (2 projects)	$45,000 (3 projects)	$45,000 (3 projects)	$165,000	Faribault SWCD Blue Earth SWCD	Faribault (56%) Blue Earth (44%)	—
BMP 5.9	Lower Maple River Management Zone (11,325 acres)	Priority HSPF Subwatersheds	Implement 1 project that result in reduction of: • 1 tons of TSS/yr • 100 lbs TN/yr • 10 lbs TP/yr			$15,000 (1 project)			$15,000	Blue Earth SWCD	Blue Earth (100%)	—
Ponds, Impoundments, and Other Engineered Water Storage Practices												
BMP 6.1	Upper Le Sueur River Management Zone (114,606 acres)	Priority HSPF Subwatersheds	10 acres-feet of water storage	$40,000 (5 acre-feet)	$40,000 (5 acre-feet)				$80,000	Waseca SWCD Freeborn SWCD	Waseca (52%) Freeborn (28%)	—
BMP 6.2	Middle Le Sueur River Management Zone (104,689 acres)	Priority HSPF Subwatersheds	10 acres-feet of water storage	$40,000 (5 acre-feet)		$40,000 (5 acre-feet)			$80,000	Waseca SWCD Blue Earth SWCD	Waseca (92%) Blue Earth (6%)	—
BMP 6.3	Upper Cobb River Management Zone (46,617 acres)	Priority HSPF Subwatersheds	5 acres-feet of water storage			$40,000 (5 acre-feet)			$40,000	Freeborn SWCD	Freeborn (75%) Faribault (13%) Waseca (12%)	—

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
Ponds, Impoundments, and Other Engineered Water Storage Practices (Continued)												
BMP 6.4	Middle Cobb River Management Zone (134,787 acres)	Priority HSPF Subwatersheds	5 acres-feet of water storage		$40,000 (5 acre-feet)				$40,000	Blue Earth SWCD Waseca SWCD	Blue Earth (48%) Waseca (47%) Faribault (4%) Freeborn (1%)	—
BMP 6.5	Upper Maple River Management Zone (67,864 acres)	Priority HSPF Subwatersheds	10 acres-feet of water storage			$40,000 (5 acre-feet)	$40,000 (5 acre-feet)		$80,000	Faribault SWCD	Faribault (98%) Freeborn (2%)	—
BMP 6.6	Middle Maple River Management Zone (139,792 acres)	Priority HSPF Subwatersheds	10 acres-feet of water storage			$40,000 (5 acre-feet)		$40,000 (5 acre-feet)	$80,000	Faribault SWCD Blue Earth SWCD	Faribault (56%) Blue Earth (44%)	—
Wetland Restorations												
BMP 7.1	Upper Le Sueur River Management Zone (114,606 acres)	Priority HSPF Subwatersheds	Implement 120 acres that result in reduction of: • 130 tons of TSS/yr • 18,800 lbs TN/yr • 530 lbs TP/yr	$183,000 (12 acres)	$305,000 (20 acres)	$366,000 (24 acres)	$610,000 (40 acres)	$366,000 (24 acres)	$1,830,000	Waseca SWCD Freeborn SWCD	Waseca (52%) Freeborn (28%)	—
BMP 7.2	Middle Le Sueur River Management Zone (104,689 acres)	Priority HSPF Subwatersheds	Implement 18 acres that result in reduction of: • 20 tons of TSS/yr • 2,300 lbs TN/yr • 60 lbs TP/yr		$122,000 (8 acres)		$152,600 (10 acres)		$274,600	Waseca SWCD Blue Earth SWCD	Waseca (92%) Blue Earth (6%)	—
BMP 7.3	Lower Le Sueur River Management Zone (74,894 acres)	Priority HSPF Subwatersheds	Implement 20 acres that result in reduction of: • 30 tons of TSS/yr • 3,400 lbs TN/yr • 90 lbs TP/yr			$152,600 (10 acres)	$152,600 (10 acres)		$305,200	Blue Earth SWCD	Blue Earth (98%) Waseca (1%)	—
BMP 7.4	Upper Cobb River Management Zone (46,617 acres)	Priority HSPF Subwatersheds	Implement 80 acres that result in reduction of: • 30 tons of TSS/yr • 11,500 lbs TN/yr • 300 lbs TP/yr	$122,000 (8 acres)	$244,000 (16 acres)	$244,000 (16 acres)	$366,000 (24 acres)	$244,000 (16 acres)	$1,220,000	Freeborn SWCD	Freeborn (75%) Faribault (13%) Waseca (12%)	—
BMP 7.5	Middle Cobb River Management Zone (134,787 acres)	Priority HSPF Subwatersheds	Implement 80 acres that result in reduction of: • 30 tons of TSS/yr • 8,900 lbs TN/yr • 180 lbs TP/yr	$122,000 (8 acres)	$244,000 (16 acres)	$244,000 (16 acres)	$366,000 (24 acres)	$366,000 (24 acres)	$1,220,000	Blue Earth SWCD Waseca SWCD	Blue Earth (48%) Waseca (47%) Faribault (4%) Freeborn (1%)	—

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
Wetland Restorations (Continued)												
BMP 7.6	Lower Cobb River Management Zone (17,044 acres)	Priority HSPF Subwatersheds	Implement 19 acres that result in reduction of: • 7 tons of TSS/yr • 1,800 lbs TN/yr • 40 lbs TP/yr		$122,000 (8 acres)		$122,000 (8 acres)		$244,000	Blue Earth SWCD	Blue Earth (100%)	—
BMP 7.7	Upper Maple River Management Zone (67,864 acres)	Priority HSPF Subwatersheds	Implement 80 acres that result in reduction of: • 20 tons of TSS/yr • 5,700 lbs TN/yr • 210 lbs TP/yr	$122,000 (8 acres)	$244,000 (16 acres)	$244,000 (16 acres)	$366,000 (24 acres)	$244,000 (16 acres)	$1,220,000	Faribault SWCD	Faribault (98%) Freeborn (2%)	—
BMP 7.8	Middle Maple River Management Zone (139,792 acres)	Priority HSPF Subwatersheds	Implement 60 acres that result in reduction of: • 20 tons of TSS/yr • 5,700 lbs TN/yr • 160 lbs TP/yr	$152,600 (10 acres)	$183,000 (12 acres)	$183,000 (12 acres)	$244,000 (16 acres)	$152,600 (10 acres)	$915,200	Faribault SWCD Blue Earth SWCD	Faribault (56%) Blue Earth (44%)	—
BMP 7.9	Lower Maple River Management Zone (11,325 acres)	Priority HSPF Subwatersheds	Implement 8 acres that result in reduction of: • 4 tons of TSS/yr • 800 lbs TN/yr • 20 lbs TP/yr			$122,000 (8 acres)			$122,000	Blue Earth SWCD	Blue Earth (100%)	—
Perennial Cover												
BMP 8.1	Upper Le Sueur River Management Zone (114,606 acres)	Priority HSPF Subwatersheds	Implement 260 acres that result in reduction of: • 40 tons of TSS/yr • 7,700 lbs TN/yr • 250 lbs TP/yr	$3,800 (27 acres)	$7,100 (51 acres)	$7,100 (51 acres)	$11,200 (80 acres)	$7,100 (51 acres)	$36,300	Waseca SWCD Freeborn SWCD	Waseca (52%) Freeborn (28%)	FSA NRCS
BMP 8.2	Middle Le Sueur River Management Zone (104,689 acres)	Priority HSPF Subwatersheds	Implement 220 acres that result in reduction of: • 30 tons of TSS/yr • 5,800 lbs TN/yr • 170 lbs TP/yr	$2,800 (20 acres)	$6,300 (45 acres)	$6,300 (45 acres)	$9,100 (65 acres)	$6,300 (45 acres)	$30,800	Waseca SWCD Blue Earth SWCD	Waseca (92%) Blue Earth (6%)	FSA NRCS
BMP 8.3	Lower Le Sueur River Management Zone (74,894 acres)	Priority HSPF Subwatersheds	Implement 160 acres that result in reduction of: • 20 tons of TSS/yr • 4,200 lbs TN/yr • 140 lbs TP/yr	$2,200 (16 acres)	$4,500 (32 acres)	$4,500 (32 acres)	$6,700 (48 acres)	$4,500 (32 acres)	$22,400	Blue Earth SWCD	Blue Earth (98%) Waseca (1%)	FSA NRCS
BMP 8.4	Upper Cobb River Management Zone (46,617 acres)	Priority HSPF Subwatersheds	Implement 50 acres that result in reduction of: • 3 tons of TSS/yr • 1,600 lbs TN/yr • 40 lbs TP/yr	$700 (5 acres)	$1,400 (10 acres)	$1,400 (10 acres)	$2,100 (15 acres)	$1,400 (10 acres)	$7,000	Freeborn SWCD	Freeborn (75%) Faribault (13%) Waseca (12%)	FSA NRCS

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
Perennial Cover (Continued)												
BMP 8.5	Middle Cobb River Management Zone (134,787 acres)	Priority HSPF Subwatersheds	Implement 80 acres that result in reduction of: • 10 tons of TSS/yr • 2,100 lbs TN/yr • 50 lbs TP/yr	$1,100 (8 acres)	$2,200 (16 acres)	$2,200 (16 acres)	$3,400 (24 acres)	$2,200 (16 acres)	$11,100	Blue Earth SWCD Waseca SWCD	Blue Earth (48%) Waseca (47%) Faribault (4%) Freeborn (1%)	FSA NRCS
BMP 8.6	Lower Cobb River Management Zone (17,044 acres)	Priority HSPF Subwatersheds	Implement 50 acres that result in reduction of: • 3 tons of TSS/yr • 1,200 lbs TN/yr • 30 lbs TP/yr	$700 (5 acres)	$1,400 (10 acres)	$1,400 (10 acres)	$2,100 (15 acres)	$1,400 (10 acres)	$7,000	Blue Earth SWCD	Blue Earth (100%)	FSA NRCS
BMP 8.7	Upper Maple River Management Zone (67,864 acres)	Priority HSPF Subwatersheds	Implement 90 acres that result in reduction of: • 4 tons of TSS/yr • 2,000 lbs TN/yr • 50 lbs TP/yr	$1,300 (9 acres)	$2,500 (18 acres)	$2,500 (18 acres)	$3,800 (27 acres)	$2,500 (18 acres)	$12,600	Faribault SWCD	Faribault (98%) Freeborn (2%)	FSA NRCS
BMP 8.8	Middle Maple River Management Zone (139,792 acres)	Priority HSPF Subwatersheds	Implement 90 acres that result in reduction of: • 10 tons of TSS/yr • 2,300 lbs TN/yr • 80 lbs TP/yr	$1,300 (9 acres)	$2,500 (18 acres)	$2,500 (18 acres)	$3,800 (27 acres)	$2,500 (18 acres)	$12,600	Faribault SWCD Blue Earth SWCD	Faribault (56%) Blue Earth (44%)	FSA NRCS
BMP 8.9	Lower Maple River Management Zone (11,325 acres)	Priority HSPF Subwatersheds	Implement 20 acres that result in reduction of: • 2 tons of TSS/yr • 600 lbs TN/yr • 20 lbs TP/yr	$300 (2 acres)	$600 (4 acres)	$600 (4 acres)	$800 (6 acres)	$600 (4 acres)	$2,900	Blue Earth SWCD	Blue Earth (100%)	FSA NRCS
Alternative Tile Intakes												
BMP 9.1	Upper Le Sueur River Management Zone (114,606 acres)	Priority HSPF Subwatersheds	Implement 2 projects that result in reduction of: • 10 tons of TSS/yr • 300 lbs TN/yr • 60 lbs TP/yr			$3,000 (2 intakes)			$3,000	Waseca County Waseca SWCD Freeborn County Freeborn SWCD Drainage Authorities	Waseca (52%) Freeborn (28%)	—
BMP 9.2	Middle Le Sueur River Management Zone (104,689 acres)	Priority HSPF Subwatersheds	Implement 2 projects that result in reduction of: • 10 tons of TSS/yr • 300 lbs TN/yr • 60 lbs TP/yr		$3,000 (2 intakes)				$3,000	Waseca County Waseca SWCD Blue Earth County Blue Earth SWCD Drainage Authorities	Waseca (92%) Blue Earth (6%)	—

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
Alternative Tile Intakes (Continued)												
BMP 9.3	Middle Cobb River Management Zone (134,787 acres)	Priority HSPF Subwatersheds	Implement 2 projects that result in reduction of: • 10 tons of TSS/yr • 300 lbs TN/yr • 60 lbs TP/yr				$3,000 (2 intakes)		$3,000	Blue Earth County Blue Earth SWCD Waseca County Waseca SWCD Drainage Authorities	Blue Earth (48%) Waseca (47%) Faribault (4%) Freeborn (1%)	—
BMP 9.4	Upper Maple River Management Zone (67,864 acres)	Priority HSPF Subwatersheds	Implement 36 projects that result in reduction of: • 50 tons of TSS/yr • 2,500 lbs TN/yr • 500 lbs TP/yr	$12,000 (8 intakes)	$12,000 (8 intakes)	$12,000 (8 intakes)	$9,000 (6 intakes)	$9,000 (6 intakes)	$54,000	Faribault County Faribault SWCD Drainage Authorities	Faribault (98%) Freeborn (2%)	—
BMP 9.5	Middle Maple River Management Zone (139,792 acres)	Priority HSPF Subwatersheds	Implement 36 projects that result in reduction of: • 80 tons of TSS/yr • 3,300 lbs TN/yr • 630 lbs TP/yr	$12,000 (8 intakes)	$12,000 (8 intakes)	$12,000 (8 intakes)	$9,000 (6 intakes)	$9,000 (6 intakes)	$54,000	Faribault County Faribault SWCD Blue Earth County Blue Earth SWCD Drainage Authorities	Faribault (56%) Blue Earth (44%)	—
Alternative Side Intakes												
BMP 10.1	Upper Le Sueur River Management Zone (114,606 acres)	Priority HSPF Subwatersheds	Complete 35 side inlet projects that result in reduction of: • 140 tons of TSS/yr • 3,600 lbs TN/yr • 850 lbs TP/yr	$34,500 (10 projects)	$34,500 (10 projects)	$20,700 (6 projects)	$17,300 (5 projects)	$13,800 (4 projects)	$120,800	Waseca County Waseca SWCD Freeborn County Freeborn SWCD Drainage Authorities	Waseca (52%) Freeborn (28%)	—
BMP 10.2	Middle Le Sueur River Management Zone (104,689 acres)	Priority HSPF Subwatersheds	Complete 32 side inlet projects that result in reduction of: • 130 tons of TSS/yr • 3,100 lbs TN/yr • 700 lbs TP/yr	$34,500 (10 projects)	$34,500 (10 projects)	$20,700 (6 projects)	$10,400 (3 projects)	$10,400 (3 projects)	$110,500	Waseca County Waseca SWCD Blue Earth County Blue Earth SWCD Drainage Authorities	Waseca (92%) Blue Earth (6%)	—
BMP 10.3	Lower Le Sueur River Management Zone (74,894 acres)	Priority HSPF Subwatersheds	Complete 18 side inlet projects that result in reduction of: • 80 tons of TSS/yr • 1,700 lbs TN/yr • 430 lbs TP/yr	$17,300 (5 projects)	$17,300 (5 projects)	$13,800 (4 projects)	$6,900 (2 projects)	$6,900 (2 projects)	$62,200	Blue Earth County Blue Earth SWCD Drainage Authorities	Blue Earth (98%) Waseca (1%)	—
BMP 10.4	Upper Cobb River Management Zone (46,617 acres)	Priority HSPF Subwatersheds	Complete 21 side inlet projects that result in reduction of: • 40 tons of TSS/yr • 1,900 lbs TN/yr • 460 lbs TP/yr	$20,700 (6 projects)	$20,700 (6 projects)	$13,800 (4 projects)	$10,400 (3 projects)	$6,900 (2 projects)	$72,500	Freeborn County Freeborn SWCD Drainage Authorities	Freeborn (75%) Faribault (13%) Waseca (12%)	—
BMP 10.5	Middle Cobb River Management Zone (134,787 acres)	Priority HSPF Subwatersheds	Complete 38 side inlet projects that result in reduction of: • 70 tons of TSS/yr • 2,900 lbs TN/yr • 600 lbs TP/yr	$38,000 (11 projects)	$38,000 (11 projects)	$27,600 (8 projects)	$13,800 (4 projects)	$13,800 (4 projects)	$131,200	Blue Earth County Blue Earth SWCD Waseca County Waseca SWCD Drainage Authorities	Blue Earth (48%) Waseca (47%) Faribault (4%) Freeborn (1%)	—

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
Alternative Side Intakes (Continued)												
BMP 10.6	Lower Cobb River Management Zone (17,044 acres)	Priority HSPF Subwatersheds	Complete 7 side inlet projects that result in reduction of: • 10 tons of TSS/yr • 600 lbs TN/yr • 120 lbs TP/yr	$6,900 (2 projects)	$6,900 (2 projects)	$3,500 (1 projects)	$3,500 (1 projects)	$3,500 (1 projects)	$24,300	Blue Earth County Blue Earth SWCD Drainage Authorities	Blue Earth (100%)	—
BMP 10.7	Upper Maple River Management Zone (67,864 acres)	Priority HSPF Subwatersheds	Complete 16 side inlet projects that result in reduction of: • 20 tons of TSS/yr • 1,100 lbs TN/yr • 240 lbs TP/yr	$17,300 (5 projects)	$17,300 (5 projects)	$10,400 (3 projects)	$3,500 (1 projects)	$6,900 (2 projects)	$55,400	Faribault County Faribault SWCD Drainage Authorities	Faribault (98%) Freeborn (2%)	—
BMP 10.8	Middle Maple River Management Zone (139,792 acres)	Priority HSPF Subwatersheds	Complete 29 side inlet projects that result in reduction of: • 50 tons of TSS/yr • 2,100 lbs TN/yr • 560 lbs TP/yr	$31,100 (9 projects)	$31,100 (9 projects)	$17,300 (5 projects)	$10,400 (3 projects)	$10,400 (3 projects)	$100,300	Faribault County Faribault SWCD Blue Earth County Blue Earth SWCD Drainage Authorities	Faribault (56%) Blue Earth (44%)	—
Grade Stabilization - Riparian (Grade stabilization structures adjacent to streams in the riparian corridor to stabilize gullies)												
BMP 11.1	Upper Le Sueur River Management Zone (114,606 acres)	Priority HSPF Subwatersheds	Complete 2 Grade Stabilization - Riparian projects		$12,000 (1 project)		$12,000 (1 project)		$24,000	Waseca SWCD	Waseca (52%) Freeborn (28%)	—
BMP 11.2	Middle Le Sueur River Management Zone (104,689 acres)	Priority HSPF Subwatersheds	Complete 3 Grade Stabilization - Riparian projects	$12,000 (1 project)		$12,000 (1 project)		$12,000 (1 project)	$36,000	Waseca SWCD	Waseca (92%) Blue Earth (6%)	—
BMP 11.3	Middle Cobb River Management Zone (134,787 acres)	Priority HSPF Subwatersheds	Complete 2 Grade Stabilization - Riparian projects		$12,000 (1 project)		$12,000 (1 project)		$24,000	Waseca SWCD	Blue Earth (48%) Waseca (47%) Faribault (4%) Freeborn (1%)	—
BMP 11.4	Upper Maple Management Zone (67,864 acres)	Priority HSPF Subwatersheds	Complete 2 Grade Stabilization - Riparian projects		$12,000 (1 project)		$12,000 (1 project)		$24,000	Faribault SWCD	Faribault (98%) Freeborn (2%)	—
BMP 11.5	Middle Maple Management Zone (139,792 acres)	Priority HSPF Subwatersheds	Complete 3 Grade Stabilization - Riparian projects	$12,000 (1 project)		$12,000 (1 project)		$12,000 (1 project)	$36,000	Faribault SWCD	Faribault (56%) Blue Earth (44%)	—

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
In Channel or In Ditch Storage*												
BMP 12.1	Upper Maple River Management Zone (67,864 acres)	Priority HSPF Subwatersheds	Complete 1 in-channel storage project			$150,000 (1 Project)			$150,000	Faribault SWCD	Faribault (98%) Freeborn (2%)	—
BMP 12.2	Middle Maple River Management Zone (139,792 acres)	Priority HSPF Subwatersheds	Complete 1 in-channel storage project					$150,000 (1 Project)	$150,000	Faribault SWCD	Faribault (56%) Blue Earth (44%)	—
Conservation Drainage Management**												
BMP 13.1	Upper Le Sueur River Management Zone (114,606 acres)	Priority HSPF Subwatersheds	Implement 4 projects that result in reduction of: • 3,900 lbs TN/yr • 10 lbs TP/yr		$18,500 (1 Saturated Buffer and 1 controlled tile drainage project)	$30,000 (1 tile line bioreactor)	$2,500 (1 controlled tile drainage project)		$51,000	Waseca SWCD Freeborn SWCD	Waseca (52%) Freeborn (28%)	—
BMP 13.2	Middle Le Sueur River Management Zone (104,689 acres)	Priority HSPF Subwatersheds	Implement 4 projects that result in reduction of: • 2,000 lbs TN/yr • 3 lbs TP/yr	$16,000 (1 saturated buffer project)	$30,000 (1 tile line bioreactor)	$2,500 (1 controlled tile drainage project)	$16,000 (1 project)		$64,500	Waseca SWCD Blue Earth SWCD	Waseca (92%) Blue Earth (6%)	—
BMP 13.3	Upper Cobb River Management Zone (46,617 acres)	Priority HSPF Subwatersheds	Implement 2 projects that result in reduction of: • 1,200 lbs TN/yr • 2 lbs TP/yr			$2,500 (1 controlled tile drainage project)	$30,000 (1 tile line bioreactor)		$32,500	Faribault SWCD Freeborn SWCD Waseca SWCD	Freeborn (75%) Faribault (13%) Waseca (12%)	—
BMP 13.4	Middle Cobb River Management Zone (134,787 acres)	Priority HSPF Subwatersheds	Implement 3 projects that result in reduction of: • 1,700 lbs TN/yr • 1 lbs TP/yr			$16,000 (1 saturated buffer project)	$2,500 (1 controlled tile drainage project)	$30,000 (1 tile line bioreactor)	$48,500	Blue Earth SWCD Waseca SWCD	Blue Earth (48%) Waseca (47%) Faribault (4%) Freeborn (1%)	—

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
Conservation Drainage Management (Continued)**												
BMP 13.5	Upper Maple River Management Zone (67,864 acres)	Priority HSPF Subwatersheds	Implement 2 projects that result in reduction of: • 1,600 lbs TN/yr • 4 lbs TP/yr	$16,000 (1 saturated buffer project)		$16,000 (1 saturated buffer project)			$32,000	Faribault SWCD	Faribault (98%) Freeborn (2%)	—
BMP 13.6	Middle Maple River Management Zone (139,792 acres)	Priority HSPF Subwatersheds	Implement 2 projects that result in reduction of: • 1,100 lbs TN/yr • 2 lbs TP/yr		$16,000 (1 saturated buffer project)		$16,000 (1 saturated buffer project)		$32,000	Blue Earth SWCD Faribault SWCD	Faribault (56%) Blue Earth (44%)	—
Farmable Storage Areas												
BMP 14.1	Watershed Wide	Areas identified in Feasibility Study	Complete 3 farmable storage projects		$20,000 (2 projects)		$10,000 (1 project)		$30,000	Waseca SWCD	N/A	—
Nutrient Management Plans and Manure Management Plans												
BMP 15.1	Watershed Wide	Interested Landowners following Outreach and Education	Enroll 4 landowners into Nutrient Management Plans or Manure Management Plans			$3,500 (1 plan)	$3,500 (1 plan)	$7,000 (2 plan)	$14,000	Blue Earth SWCD Waseca SWCD Faribault SWCD Freeborn SWCD	N/A	—
Stream Restorations												
BMP 16.1	Upper Le Sueur River Management Zone (114,606 acres)	Le Sueur River	Implement 1 streambank stabilization or restoration project			$100,000 (1 project)			$100,000	Waseca SWCD	Waseca (52%) Freeborn (28%)	DNR
BMP 16.2	Middle Le Sueur River Management Zone (104,689 acres)	Le Sueur River	Implement 1 streambank stabilization or restoration project			$100,000 (1 project)			$100,000	Waseca SWCD	Waseca (92%) Blue Earth (6%)	DNR
BMP 16.3	Middle Maple River Management Zone (139,792 acres)	Rice Creek	Implement 2 streambank stabilization or restoration project			$100,000 (1 project)	$100,000 (1 project)		$200,000	Faribault SWCD	Faribault (56%) Blue Earth (44%)	DNR

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
Ravine Grade Stabilization (Stabilization structures for ravines in the Minnesota River Valley)												
BMP 17.1	Lower Le Sueur River Management Zone (74,894 acres)	Priority HSPF Subwatersheds	Complete 1 ravine grade stabilization project		$40,000 (1 project)				$40,000	Blue Earth County Blue Earth SWCD	Blue Earth (98%) Waseca (1%)	—
BMP 17.2	Lower Cobb River Management Zone (17,044 acres)	Priority HSPF Subwatersheds	Complete 1 ravine grade stabilization project			$40,000 (1 project)			$40,000	Blue Earth County Blue Earth SWCD	Blue Earth (100%)	—
BMP 17.3	Lower Maple River Management Zone (11,325 acres)	Priority HSPF Subwatersheds	Complete 1 ravine grade stabilization project				$40,000 (1 project)		$40,000	Blue Earth County Blue Earth SWCD	Blue Earth (100%)	—
Lakeshore Restorations												
BMP 18.1	Upper Le Sueur River Management Zone (114,606 acres)	St. Olaf Lake	Restore 100 linear feet of lakeshore			$10,000 (100 linear feet)			$10,000	Waseca County Waseca SWCD	Waseca (52%) Freeborn (28%)	DNR
BMP 18.2	Middle Le Sueur River Management Zone (104,689 acres)	Reeds Lake and Lake Elysian	Restore 200 linear feet of lakeshore		$10,000 (100 linear feet)		$10,000 (100 linear feet)		$20,000	Waseca County Waseca SWCD	Waseca (92%) Blue Earth (6%)	DNR
BMP 18.3	Lower Le Sueur River Management Zone (74,894 acres)	Bray Park and Madison Lake	Restore 500 linear feet of lakeshore	$10,000 (100 linear feet)	$10,000 (100 linear feet)	$10,000 (100 linear feet)	$10,000 (100 linear feet)	$10,000 (100 linear feet)	$50,000	Blue Earth County Blue Earth SWCD	Blue Earth (98%) Waseca (1%)	DNR
BMP 18.4	Middle Maple River Management Zone (139,792 acres)	Lura Lake, Bass Lake, Rice Lake	Restore 200 linear feet of lakeshore	$5,000 (50 linear feet)	$5,000 (50 linear feet)		$5,000 (50 linear feet)	$5,000 (50 linear feet)	$20,000	Faribault County Faribault SWCD Blue Earth County Blue Earth SWCD	Faribault (56%) Blue Earth (44%)	DNR

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
In-Lake Biomanipulation												
BMP 19.1	Upper Le Sueur River Management Zone (114,606 acres)	Elysian	Complete 1 in-lake biomanipulation project pending the results of feasibility study. See Table 4.3 Data and Studies Implementation Table.			$40,000 (1 project)			$40,000	Waseca County Waseca SWCD	Waseca (52%) Freeborn (28%)	DNR
BMP 19.2	Middle Maple River Management Zone (139,792 acres)	Bass or Lura Lake	Complete 1 in-lake biomanipulation project pending the results of feasibility study. See Table 4.3 Data and Studies Implementation Table.			$40,000 (1 project)			$40,000	Faribault County Faribault SWCD	Faribault (56%) Blue Earth (44%)	—
Lake Alum Treatments												
BMP 20.1	Middle Maple River Management Zone (139,792 acres)	Bass Lake	Complete 1 lake alum treatment			$100,000 (1 project)			$100,000	Faribault County Faribault SWCD	Faribault (56%) Blue Earth (44%)	DNR
Lake Vegetation Management												
BMP 21.1	Middle Le Sueur River Management Zone (104,689 acres)	Lower Elysian Buffalo Lake	Complete 2 lake vegetation management projects		$1,000 (1 project)	$1,000 (1 project)			$2,000	Waseca County Waseca SWCD	Waseca (92%) Blue Earth (6%)	DNR
BMP 21.2	Middle Maple River Management Zone (139,792 acres)	Bass Lake	Complete 5 lake vegetation management projects	$1,000 (1 project)	$1,000 (1 project)	$1,000 (1 project)	$1,000 (1 project)	$1,000 (1 project)	$5,000	Faribault County Faribault SWCD	Faribault (56%) Blue Earth (44%)	DNR
Urban Stormwater Best Management Practices Permanent BMPs allowed by the Minnesota Stormwater Manual above and beyond current MPCA requirements for water quality and storage												
BMP 22.1	Watershed Wide	Urban Areas	Implement 14.5 acres that result in reduction of: • 4 tons of TSS/yr • 39 lbs TN/yr • 3 lbs TP/yr		$105,000 (2.5 acres)	$601,000 (12 acres)			$706,000	Waseca County, Waseca SWCD, Blue Earth County, Blue Earth SWCD	N/A	—

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
Seal Unused Wells												
BMP 23.1	Upper Le Sueur River Management Zone (114,606 acres)	Priority Groundwater Subwatersheds	Seal 8 wells	$2,700 (1 well/s)	$2,700 (1 well/s)	$5,400 (2 well/s)	$5,400 (2 well/s)	$5,400 (2 well/s)	$21,600	Freeborn County	Waseca (52%) Freeborn (28%)	MDH
BMP 23.2	Middle Le Sueur River Management Zone (104,689 acres)	Priority Groundwater Subwatersheds	Seal 5 wells	$2,700 (1 well/s)	$2,700 (1 well/s)	$2,700 (1 well/s)	$2,700 (1 well/s)	$2,700 (1 well/s)	$13,500	Waseca County	Waseca (92%) Blue Earth (6%)	MDH
BMP 23.3	Lower Le Sueur River Management Zone (74,894 acres)	Priority Groundwater Subwatersheds	Seal 50 wells	$27,000 (10 well/s)	$27,000 (10 well/s)	$27,000 (10 well/s)	$27,000 (10 well/s)	$27,000 (10 well/s)	$135,000	Blue Earth County	Blue Earth (98%) Waseca (1%)	MDH
BMP 23.4	Upper Cobb River Drainage Management Zone (46,617 acres)	Priority Groundwater Subwatersheds	Seal 8 wells	$2,700 (1 well/s)	$2,700 (1 well/s)	$5,400 (2 well/s)	$5,400 (2 well/s)	$5,400 (2 well/s)	$21,600	Freeborn County	Freeborn (75%) Faribault (13%) Waseca (12%)	MDH
BMP 23.5	Middle Cobb River Drainage Management Zone (134,787 acres)	Priority Groundwater Subwatersheds	Seal 50 wells	$27,000 (10 well/s)	$27,000 (10 well/s)	$27,000 (10 well/s)	$27,000 (10 well/s)	$27,000 (10 well/s)	$135,000	Blue Earth County	Blue Earth (48%) Waseca (47%) Faribault (4%) Freeborn (1%)	MDH
BMP 23.6	Lower Cobb River Drainage Management Zone (17,044 acres)	Priority Groundwater Subwatersheds	Seal 50 wells	$27,000 (10 well/s)	$27,000 (10 well/s)	$27,000 (10 well/s)	$27,000 (10 well/s)	$27,000 (10 well/s)	$135,000	Blue Earth County	Blue Earth (100%)	MDH
BMP 23.7	Upper Maple River Drainage Management Zone (67,864 acres)	Priority Groundwater Subwatersheds	Seal 15 wells	$8,100 (3 well/s)	$8,100 (3 well/s)	$8,100 (3 well/s)	$8,100 (3 well/s)	$8,100 (3 well/s)	$40,500	Faribault County	Faribault (98%) Freeborn (2%)	MDH

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
Seal Unused Wells (Continued)												
BMP 23.8	Middle Maple River Drainage Management Zone (139,792 acres)	Priority Groundwater Subwatersheds	Seal 60 wells	$32,400 (13 well/s)	$32,400 (13 well/s)	$32,400 (13 well/s)	$32,400 (13 well/s)	$32,400 (13 well/s)	$162,000	Blue Earth County Faribault County	Faribault (56%) Blue Earth (44%)	MDH
BMP 23.9	Lower Maple River Drainage Management Zone (11,325 acres)	Priority Groundwater Subwatersheds	Seal 50 wells	$27,000 (10 well/s)	$27,000 (10 well/s)	$27,000 (10 well/s)	$27,000 (10 well/s)	$27,000 (10 well/s)	$135,000	Blue Earth County	Blue Earth (100%)	MDH
SSTS Repair/Replacements												
BMP 24.1	Upper Le Sueur River Management Zone (114,606 acres)	Priority Groundwater Subwatersheds	Repair/replace 10 Septic Systems	$20,000 (1 SSTS)	$20,000 (1 SSTS)	$40,000 (2 SSTS)	$60,000 (3 SSTS)	$60,000 (3 SSTS)	$200,000	Freeborn County	Waseca (52%) Freeborn (28%)	MPCA
BMP 24.2	Lower Le Sueur River Management Zone (74,894 acres)	Priority Groundwater Subwatersheds	Repair/replace 10 Septic Systems	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$200,000	Blue Earth County	Blue Earth (98%) Waseca (1%)	MPCA
BMP 24.3	Upper Cobb River Management Zone (46,617 acres)	Priority Groundwater Subwatersheds	Repair/replace 10 Septic Systems	$20,000 (1 SSTS)	$20,000 (1 SSTS)	$40,000 (2 SSTS)	$60,000 (3 SSTS)	$60,000 (3 SSTS)	$200,000	Freeborn County	Freeborn (75%) Faribault (13%) Waseca (12%)	MPCA
BMP 24.4	Lower Cobb River Management Zone (17,044 acres)	Priority Groundwater Subwatersheds	Repair/replace 10 Septic Systems	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$200,000	Blue Earth County	Blue Earth (100%)	MPCA
BMP 24.5	Upper Maple River Management Zone (67,864 acres)	Priority Groundwater Subwatersheds	Repair/replace 5 Septic Systems	$20,000 (1 SSTS)	$20,000 (1 SSTS)	$20,000 (1 SSTS)	$20,000 (1 SSTS)	$20,000 (1 SSTS)	$100,000	Faribault County	Faribault (98%) Freeborn (2%)	MPCA
BMP 24.6	Middle Maple River Management Zone (139,792 acres)	Priority Groundwater Subwatersheds	Repair/replace 10 Septic Systems	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$200,000	Blue Earth County Faribault County	Faribault (56%) Blue Earth (44%)	MPCA

Table 4.1: BMP Implementation

Location		Targeted Area or Resource/s	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Counties in Mgmt. Zone (% Mgmt. Zone Area)	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)				
SSTS Repair/Replacements (Continued)												
BMP 24.7	Lower Maple River Management Zone (11,325 acres)	Priority Groundwater Subwatersheds	Repair/replace 10 Septic Systems	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$40,000 (2 SSTS)	$200,000	Blue Earth County	Blue Earth (100%)	MPCA
Water Conservation of Free Flowing Wells (installation of a flowing spool well underground discharge unit and corresponding pressure tank system)												
BMP 25.1	Watershed Wide	Watershed Wide	Install 2 projects		1 Project ($7,000)		1 Project ($7,000)		$14,000	Blue Earth County Blue Earth SWCD Freeborn County Freeborn SWCD Faribault County Faribault SWCD Waseca County Waseca SWCD	N/A	DNR MDH
BMP Implementation Total									**$28,157,200**			

*That does not limit fish migration

**Saturated buffers, bioreactors, controlled drainage

Table 4.2: Outreach and Education Implementation

Implementation Action		Location	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)			
O&E 1.1	Conduct one on one outreach efforts to promote manure management BMPs in coordination with Feedlot compliance inspections and to increase voluntary adoption of manure management plans	Watershed Wide	Conduct 30 one on one outreach efforts	X	X	X	X	X	$7,800	County Feedlot Officers	MPCA
O&E 1.2	Maintain current positions to lead outreach and education efforts and explore opportunities to hire additional outreach and education position(s) if need is determined and supported by Joint Powers Collaboration.	Watershed Wide	Maintain current number of Staff. Hire additional staff as determined by Joint Powers Collaboration	X	X	X	X	X	$800,000	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD	—
O&E 1.3	Develop and distribute outreach materials about upcoming grant opportunities and cost share programs for landowners	Priority areas for each biennium	At least 50 targeted outreach effort per biennium (includes but not limited to social media posts, mailings, newspaper postings, and other)	X	X	X	X	X	$13,000	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD	MPCA BWSR
O&E 1.4	Develop materials and conduct outreach and education events following detection of contaminants.	Target private wells in areas with contaminates detected, including areas of private wells adjacent to public well areas	Distributed notification to impacted area(s) within three weeks of contaminant discovery.		X		X		$2,600	Blue Earth County Faribault County Freeborn County Waseca County	MDH, MDA
O&E 1.5	Promote testing of private wells for all contaminants (coliform bacteria, nitrate, arsenic, lead, manganese), adoption of practices for groundwater protection (i.e. manure management, nutrient management, cover crops, SSTS replacement, etc.), and well sealing.	Watershed Wide	Educational materials distributed to private well owners semi-annually	X	X	X	X	X	$44,200	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD	MPCA, MDH, MDA
O&E 1.6	Provide educational materials on Minnesota's wetland banking system through LGU permitting and WCA programs to encourage and promote wetland creation and restoration in the Le Sueur River Watershed.	Watershed Wide	Distribute informational materials to distribute to landowners and contractors through permitting process, attend trainings (online modules, hosted, or regional trainings) and coordinate with BWSR and other agencies	X	X	X	X	X	$62,400	Waseca County Freeborn County, Blue Earth County Faribault SWCD	BWSR

Table 4.2: Outreach and Education Implementation

Implementation Action		Location	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)			
O&E 1.7	Host educational workshops for contractors on the benefits multipurpose drainage management (controlled tile drainage, WASCOBs, ASIs, wetlands, saturated buffers, and other BMPs)	Watershed Wide	Host 1 workshop per biennium	X	X	X	X	X	$13,000	Plan Coordinator	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD Le Sueur River Watershed Network
O&E 1.8	Provide educational materials on riparian zones and native vegetation	Priority areas for shoreland and riparian issue	Develop website page with informational materials	X	X	X	X	X	$2,600	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD	DNR
O&E 1.9	Collaborate with drainage authorities, counties, and SWCDs to discuss opportunities for increasing BMP adoption in upcoming drainage projects. This includes aligning plan goals with funding opportunities to apply multipurpose drainage management (MDM).	Watershed Wide	Annual meetings to discuss upcoming opportunities	X	X	X	X	X	$31,200	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD	MPCA; Drainage Authorities
O&E 1.10	Promote Score Your Shore program to shoreline landowners	Priority Lakes: Bass, Lura, Madison, St. Olaf, Reeds, Elysian	Meet annually with each lake association to assist landowners with completing Score Your Shore documents and education.	X	X	X	X	X	$6,500	Waseca County, Blue Earth County, Faribault SWCD	DNR, Lake Associations Le Sueur River Watershed Network
O&E 1.11	Distribute educational materials about impacts of stormwater and urban BMP opportunities to increase public's awareness of how their actions impact water quality and opportunities to adopt practices on their land.	Urban areas, towns	Distribution and promotion of MPCA stormwater manual guidance and urban BMPs annually	X	X	X	X	X	$10,400	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD	MPCA

Table 4.2: Outreach and Education Implementation

Implementation Action		Location	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)			
O&E 1.12	Host forums, workshops, and field days to promote watershed improvement efforts and opportunities, and to highlight success stories	Watershed Wide	Host 1 event per year	X	X	X	X	X	$51,000	Plan Coordinator	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD Le Sueur River Watershed Network
O&E 1.13	Establish demonstration sites of urban and agricultural BMPs (example demonstration sites would include saturated buffers, controlled tile drainage, nutrient management, shoreland restorations, rain gardens, and other. Coordination needed between partners to ensure diversity of practices and locations.)	Watershed Wide	Establish 4 demonstration sites (one per participating county)		X		X		$6,160	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD	Le Sueur River Watershed Network
O&E 1.14	Host workshops with local decision makers to increase awareness of and participation in conservation efforts	Watershed Wide	Host 1 workshop per biennium	X	X	X	X	X	$13,000	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD	—
O&E 1.15	Develop and maintain online location for CWMP with ability for landowner inquiries and involvement.	Watershed Wide	Website established and updated quarterly	X	X	X	X	X	$26,000	Plan Coordinator	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD

Table 4.2: Outreach and Education Implementation

Implementation Action		Location	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)			
O&E 1.16	Purchase of a portable scale (s) to help calibrate manure spreaders to determine rate of manure application.	Watershed Wide	Number of manure spreaders calibrated	X	X				$5,000	Blue Earth County	Blue Earth SWCD Faribault SWCD Freeborn SWCD Waseca SWCD MPCA
O&E 1.17	Purchase or build a 3D water table to bring to county fairs and educational events	Watershed Wide	Acquire one water table	X					$20,000	Waseca SWCD	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County
O&E 1.18	Conduct one on one outreach and eduction efforts to increase nutrient efficiency	Watershed Wide	Conduct 30 of one on one outreach efforts	X	X	X	X	X	$7,800	Plan Coordinator	Blue Earth SWCD Faribault SWCD Freeborn SWCD Waseca SWCD
O&E 1.19	Promote hunting walk-in access and walk-in access for paddling to promote recreation within the watershed.	Watershed Wide	Conduct 30 one on one outreach efforts	X	X	X	X	X	$7,800	Blue Earth SWCD Blue Earth County Faribault SWCD Faribault County Freeborn SWCD Freeborn County Waseca SWCD Waseca County	DNR
Outreach and Eduction Implementation Total									**$1,130,460**		

Table 4.3: Data and Studies Implementation

Implementation Action		Location	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)			
D&S 1.1	Review completed DNR studies and evaluate potential for floodplain connection projects in Le Sueur River Watershed	Upper and Middle Maple Management Zones and other locations as identified in feasibility studies	Review number of feasibility studies developed during plan implementation.	X	X	X			$5,200	Plan Coordinator	DNR
D&S 1.2	Complete a feasibility study for streambank stabilization, restoration, re-meanders, or floodplain connectivity.	Upper Le Sueur River Management Zone, Cobb Creek, Rice Creek	Develop 3 feasibility studies	X	X	X			$45,000	Plan Coordinator	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD DNR
D&S 1.3	Update Madison Lake Management Plan to investigate external loading and in-lake treatment feasibility including biomanipulation and alum treatments.	Madison Lake	Updated lake management plan, plan for next steps in implementing management plan	X	X				$15,000	Blue Earth County	DNR MPCA
D&S 1.4	Develop feasibility studies for Lura Lake, Elysian Lake, and Bass Lake to investigate external loading and determine whether in-lake biomanipulation and or alum treatments would be beneficial.	Lura and Bass Lakes	Develop feasibility studies for Lura, Elysian, and Bass Lakes	X	X				$30,000	Blue Earth County, Faribault County	DNR MPCA
D&S 1.5	Complete feasibility analysis and develop program details for a farmable storage areas program.	Watershed Wide	Analysis of program feasibility and defined program components if deemed worthwhile	X	X				$15,000	Waseca SWCD	MPCA BWSR MDA

Table 4.3: Data and Studies Implementation

Implementation Action		Location	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)			
D&S 1.6	Complete water storage feasibility analysis for Middle Cobb, Middle Maple, and Middle Le Sueur management zones. (Water storage practices includes retention structures and basins, soil and substrate infiltration, wetlands, channel restoration and floodplain connectivity in all areas including public drainage systems. See Table 5.1 for list of water storage practices to consider)	Priority areas	Feasibility study	X	X				$45,000	Plan Coordinator	Blue Earth County Blue Earth SWCD Waseca County Waseca SWCD DNR
D&S 1.7	Continue existing water quality monitoring efforts.	Waseca County (2 monitoring points on priority streams)	Collect monthly water quality and flow data during monitoring season as weather allows	X	X	X	X	X	$31,200	Waseca County	MPCA
D&S 1.8	Utilize existing multipurpose drainage management (MDM) plans to identify partnership opportunities with the drainage authorities to implement water storage and water quality projects.	Watershed Wide	Attend 1 meeting per year with 5 MDM projects resulting from meetings for each partnering county	X	X	X	X	X	$20,800	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD	—
D&S 1.9	Complete a septic system compliance inventory of homes with non-permitted SSTS to locate imminent health threats.	Freeborn County	Completed SSTS inventory for Freeborn County	X	X				$10,000	Freeborn County	—
D&S 1.10	Complete well inventory of abandoned or removed farmsteads to identify potential locations of abandoned wells for rural areas for entire watershed.	Watershed Wide	Completed well inventory for each city and inventory of abandoned or removed farmsteads for rural areas in each county		X	X			$65,520	Plan Coordinator	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD DNR MDH

Table 4.3: Data and Studies Implementation

Implementation Action		Location	Measurable output for this activity	Timeframe					Estimated Cost	Lead LGU	Support
				Years 1 & 2 ($$)	Years 3 & 4 ($$)	Years 5 & 6 ($$)	Years 7 & 8 ($$)	Years 9 & 10 ($$)			
D&S 1.11	Increase the participation in citizen lake monitoring programs	Priority lakes	At least 1 participant in the citizen lake monitoring program at each priority lake	X	X	X	X	X	$10,400	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD	DNR, MPCA, Lake Associations
D&S 1.12	Coordinate with the DNR to receive most current hydraulic evaluation outcomes to inform water quantity and rate implementation planning.	Watershed Wide	Review DNR Evaluation of Hydraulic Change study for the Le Sueur River Watershed and review plan to ensure alignment	X					$520	Plan Coordinator	DNR
D&S 1.13	Conduct comparison study between county partners' ordinances including but not limited to shoreland, feedlot, solar farms, wetlands, stormwater, and others as determined necessary. Ordinance comparisons will include reviewing implementation actions and barriers outlined in the Plan and sharing educational materials about findings and impacts to water and natural resources to city councils and county boards.	Watershed Wide	Complete 1 comparison analysis summary per ordinance	X	X	X	X	X	$20,800	Blue Earth SWCD Blue Earth County Faribault County Faribault SWCD Freeborn County Freeborn SWCD Waseca County Waseca SWCD	Cities with Ordinances, DNR
Data and Studies Implementation Total									**$314,440**		

Table 4.4 Total Anticipated Implementation Costs

BMP Implementation Total	**$28,157,200**
Outreach and Education Implementation Total	**$1,130,460**
Data and Studies Implementation Total	**$314,440**
Grand Total	**$29,602,100**

05

IMPLEMENTATION PROGRAMS

Did you know?

Incentive programs include cost-share programs, the Minnesota Agriculture Water Quality Certification Program (MAWQCP), fee discounts, and low interest loans.

IMPLEMENTATION PROGRAMS

Introduction

Plan implementation programs support the implementation actions and are necessary to ensure that the Plan goals are accomplished. These programs are described in this section.

- Incentive programs
- Capital improvement projects
- Operation and maintenance plans
- Outreach and education program
- Land use management
- Monitoring program

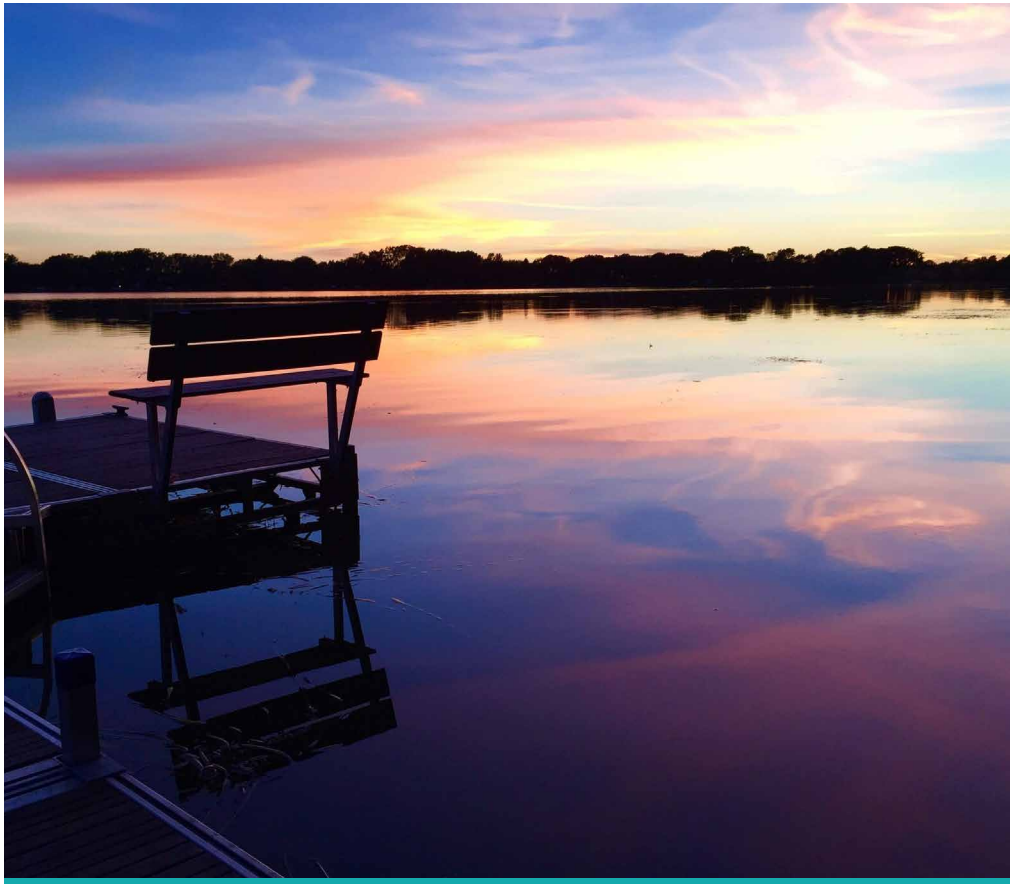


Figure 5.1: Reeds Lake

Incentive Programs

Incentive programs are formal programs used to promote specific actions or behaviors. Various mechanisms can be used for conducting incentive programs, including financial assistance, or providing benefits for enrolling in programs. The Partnership organizations will strive to coordinate incentive programs to provide consistency across the watershed while following the targeting approach identified in *Section 4* to guide project selection and dispersal of funds.

The partners have identified several criteria that will be used to assist with the project selection and fund dispersal process. These criteria include, but may not be limited to, project location, pollutant reductions or amount of storage achieved, and multiple benefit approach. The highest ranking projects will be selected to move forward as funding allows. Outreach activities that have been outlined in Table 4.2, with a general program outline beginning on page 162. These outreach efforts will be utilized to engage landowners and build working relationships with them, which will encourage the implementation of key practices in critical areas. The implementation tables provide an anticipated schedule for implementation actions to occur throughout the watershed.

Cost-Share Programs

In a cost-share program, the costs of systems or practices that are designed to protect and improve water quality, groundwater, habitat, and soil-and-water resources are shared between the landowner and a sponsoring entity such as the local, state, or federal government. The BMPs and conservation practices typically eligible for a cost-share program are those that avoid, control, and trap nutrients, sediment, and E. coli from entering surface water and groundwater. Structural practices that may be eligible include sediment-control structures or streambank stabilization projects. Nonstructural practices that may be eligible include soil health, cover crops, manure management planning services, and implementation of those plans. Eligibility may vary depending on local priorities and needs.

Minnesota Agricultural Water Quality Certification Program

The Minnesota Agricultural Water Quality Certification Program (MAWQCP) allows producers to voluntarily enroll in this program. By enrolling, producers agree to participate in a farm review process to identify current conservation strengths and areas to improve conservation efforts on the farm. The producer is then eligible to receive financial assistance to implement and maintain approved farm management practices and obtain certification that their operation protects surface waters from the impacts of agricultural practices. Technical and financial assistance is prioritized for those who enroll but are not yet certified. Once producers have been certified through the program, they receive immunity, also known as regulatory assurance or certainty, from regulation under Minnesota's water quality standards in exchange for the implementation of certain conservation activities for 10 years.

Fee Discounts

Local governments and nonprofit entities may offer reductions in fees for implementing projects and practices that align with program goals. For instance, public-drainage authorities could offer discounted permit application, review, and inspection fees if the landowner voluntarily implements a rate reduction project, or stormwater fees could be reduced if a landowner voluntarily converts cropped acres to permanent vegetative cover acres.

Low Interest Loans

Low interest loans may be available through various state agencies to landowners for agricultural best management practices implementation, septic system replacement, or other projects that meet funding eligibility criteria. Typically, a local government unit applies for the funds, works with the landowners to approve the project, and enrolls the landowner in the low interest loan program. This process allows the local government unit to be the day-to-day contact while assisting landowners through the process.

Capital Improvement Projects

For the purposes of this Plan, **Capital Improvement Projects (CIPs)** are projects that are larger scaled, more expensive, and have a longer effective life than the projects typically funded through traditional incentive and cost-share programs. The types of projects eligible for CIP status typically provide significant, regional benefits and may require feasibility studies before design and construction. These projects require operation and maintenance (O&M) plans for the life of the project, which includes an inspection schedule to ensure the project's effectiveness. An **easement** and/or **land acquisition** are both potential components of CIPs. Within the Watershed, partnership counties are the best suited entities to hold easements. Any of the CIP types listed below could include an easement component to ensure that the project is maintained adequately throughout the project life. These projects are often completed in cooperation with multiple entities and are strong candidates for state or federal grant funding. Costs of CIPs may vary, but usually exceed $500,000.

CIPs for the Watershed include:

- Permanent conservation easements
- Habitat protection and restoration
- Stream restoration
- Increasing water storage
- Water quality protection
- Urban stormwater treatment
- Permanent protection of undeveloped shoreline
- Culvert, bridge, or dam modifications
  To increase connectivity or reduce the likelihood of invasive species migration

The projects may be combined to create or enhance a green-print or green infrastructure space that is the result of strategic planning to create an interconnected network of natural spaces. These natural spaces may include, but are not limited to wetlands, woodlands, parks, and waterways.

The 2017 Blue Earth County Water Plan outlines this concept, project criteria, and identifies potential project sites. Scan the QR code or follow the link to the right to learn more. When CIPs in Blue Earth County are being considered, the Greenprint prioritization should be used. Greenprint priorities start on page 85.

The partners are dedicated to focusing on water storage BMPs and CIPs to address extreme weather events, increased precipitation, and altered hydrology with an overarching goal that these projects will create a no net increase in runoff and, when feasible, reduce runoff. These efforts will be focused in targeted areas, partnering with the drainage authorities to bring supplemental funding for water storage efforts that go above and beyond traditional drainage projects. To ensure success in improving water storage within the watershed, the partners will enhance their educational efforts with decision makers and landowners about why this is an important topic, while seeking additional funding to achieve water storage goals.

Capital Improvement Projects (CIPs)
Projects that are larger scaled, more expensive, and have a longer effective life than the projects typically funded through traditional incentive and cost-share programs.

Easement
A right to cross or otherwise use someone else's land for a specified purpose

Land Acquisition
The act of acquiring land

Did you know?
Costs of CIPs may vary, but usually exceed $500,000

2017 Blue Earth County Water Plan
bit.ly/BEC_2017WaterPlan

CIP Qualification Guidelines

- ✓ Typically costs >$500,000
- ✓ 20+ Years Project Life Expectancy
- ✓ Operation and Maintenance Plan
- ✓ Inspection Schedule
- ✓ Public or Entity Ownership of Structures
- ✓ Regional Benefit
- ✓ Five- to Seven-Year Timeframe from Concept Development Through Project Implementation

Water Storage
A means for managing water quantity and rate through retention and detention of water on various temporal and spatial scales through structural and nonstructural best management practices. Effective water storage should also improve water quality.

Biennium
A specified period of two years.

Implementation of Capital Improvement Projects

Implementation of CIPs, in tandem with drainage projects aimed at water quantity and water quality improvements, will be included in the development of multi-purpose drainage management plans.

All four of the county partners within the planning area serve as the Drainage Authority for the public drainage systems within their boundaries. As such, the county representatives in the partner meetings will regularly communicate with their drainage staff to ensure that drainage projects are consistent with the goals of the Plan, and to identify opportunities for partnership based on the work of the Drainage Authority and the SWCD partners.

Where possible, the Partnership will provide technical expertise and assist Drainage Authorities in integrating **water storage**, water quality, and habitat improvements into drainage projects by securing funding through grants and low interest loans. The Partnership may also coordinate meetings with other key partners in multi-purpose drainage projects, such as the DNR, road authorities, and the United States Army Corps of Engineers (USACE). Due to the vast amount of altered hydrology within the Watershed, water storage projects will be a priority when meeting with Drainage Authorities and other partners.

Within the Watershed, opportunities to implement large scale projects will generally depend on the ability to secure the necessary funding through grants and loans. Funding options to complete these projects will be explored by the partners during the development of each **biennium** work plan.

Though a specific CIP implementation table has not been developed for the Plan document, the partners intend to develop CIPs as appropriate to achieve the goals of the Plan in a more cost-effective manner than traditional BMPs.

Check out the connection between soil organic matter and soil water! Learn about the potential for water storage in the soil profiles here:
bit.ly/soilorganicmatterwater

Water Storage Programs and Definitions

In recent years, there has been significant discussion on water storage throughout Minnesota at the state and local levels. Studies and research have found the need for water storage on the landscape to meet water quality standards for nutrients and sediment especially in watersheds dominated by agricultural landscapes. Water storage has also been identified as a means for managing water quantity concerns due to increases in precipitation and altered hydrology. Water storage can be defined in many ways, and it will be important to identify the types of water storage that will help to best achieve the goals in the Plan.

Water storage can be achieved through many types of BMPs. BMPs should be prioritized on practices with the ability to meet the goals of the plan in the prioritized locations determined from the Plan framework. Table 5.1 outlines practices with the potential to reduce peak flows and/or volumes. Some BMPs are more effective at reducing peak flow rates, while other BMPs may be better suited to reduce annual flow volumes. Practices effective at reducing peak flows rates temporarily or permanently remove water from the peak flow portion of the **hydrograph** at an area of interest. Practices that are most effective include wetland restoration or impoundments. Practices most effective for managing annual flow volumes hold water on the land or in soils to increase evapotranspiration and infiltration. Practices that are most effective include those associated with land use changes and soil health practices.

Retention
Long-term storage, including both volume control and rate control.

Detention
Temporary storage, focusing on rate control only.

Hydrograph
A graphic representation of flow rate versus time.

Table 5.1: Water Storage Practices (Source: BWSR, 2022, Water Storage: A Planning and Decision Support Framework)

Practice Type	Increase	Increase soil water holding capacity	Increase short-term surface storage (detention)	Increase long-term surface storage (retention)
Crop and Soil Management				
Cover Crops (340)*	✕	✕		
Conservation Cover (328)*	✕	✕		
Conservation Tillage (329,345, and 346)*	✕	✕		
Contour Farming (330)*	✕	✕	✕	
Field Borders (386)*	✕	✕		
Forage and Biomass Plantings (512)*	✕	✕		
Manure Applications*		✕		
Land use change to perennial cover (328, 512, etc.)*	✕	✕	✕	

**Practices currently in the implementation table.*

Table 5.1: Water Storage Practices (Source: BWSR, 2022, Water Storage: A Planning and Decision Support Framework)

Practice Type	Increase	Increase soil water holding capacity	Increase short-term surface storage (detention)	Increase long-term surface storage (retention)
In Field Drainage Water Management				
Controlled drainage (DWM 554)*	✖		✖	
Alternative tile inlets*			✖	
Alternative drainage design, including water capture and reuse, saturated buffers, etc.*			✖	✖
Surface Flow Management				
Grassed Waterway (412)*	✖			
Filter Strips (393)*	✖			
Contour Buffer Strips (332)*	✖			
Structural Storage + Infiltration				
Saturated buffers (604)*	✖	✖		
Small Impoundments (356-dike)*			✖	✖
Large impoundments (356-dike)*			✖	✖
Constructed Wetlands (656)*	✖		✖	✖
Wetland Restoration (657)*	✖		✖	✖
Ponds (378)*			✖	✖
Water and Sediment Control Basins (638)*			✖	
Terrace (600)*			✖	
Farmable Storage Areas*			✖	
Urban stormwater management (rain gardens, permeable pavers, etc.)*			✖	✖

**Practices currently in the implementation table.*

Table 5.1: Water Storage Practices (Source: BWSR, 2022, Water Storage: A Planning and Decision Support Framework)

Practice Type	Increase	Increase soil water holding capacity	Increase short-term surface storage (detention)	Increase long-term surface storage (retention)
In-Channel Water Retention				
Two-stage ditch (582)*			✕	
Protection/management of existing ditches with two-stage channel			✕	
Design standards for surface drainage that reduce flood peaks			✕	
Strategic culvert sizing			✕	
Ditch plugging or abandonment			✕	
Grade Stabilization (410)*			✕	
Setting back existing levees			✕	
Impoundments (356-dikes)*			✕	✕
Riparian Restoration and Protection				
Natural channel restoration*			✕	
Natural channel rehabilitation*			✕	
Riparian corridor rehabilitation/management*	✕		✕	
Other				
Update operating plans of existing impoundments			✕	
Manage outlets of existing lakes and wetlands			✕	

**Practices currently in the implementation table.*

Easements

There are many avenues available for easements that may be unique to each situation and practice being implemented. If utilizing Clean Water Funds, RIM rates may not be exceeded for easement payments, however, other avenues of funding may be secured where easement could be funded through different ways *(Table 5.2).*

Table 5.2: Easement Options

Easement Options	Holder	Considerations
Support Existing State Programs	State	*Need to follow program criteria such as cropping history and wetland or practice design for programs such as RIM or CREP.*
Public Drainage Management	Drainage Authority	*Need to follow criteria supported by Drainage Authority. Needs to be within benefited watershed and benefit drainage system.*
Develop Project Partnerships	Private Organizations	*Develop partnerships with groups that have alike goals such as Minnesota Valley Land Trust, Pheasants Forever, Minnesota Pheasants, Inc., Ducks Unlimited, Nature Conservancy or other environmental, water, or natural resources organizations.*
Develop Support from Project Stakeholders	Cities or Counties	*Develop support for projects in counties or cities that the project may benefit.*

Operation + Maintenance Plans

After CIPs have been constructed, regular inspections and maintenance are important to keep the project functioning at its designed capacity and to fulfill its life expectancy. The parties responsible for Operations and Maintenance (O&M) inspection procedures and enforcement will vary based on the type of project, funding entity, and contractual requirements. Local entities within the watershed will be responsible for the inspection, operation, and maintenance of capital projects, stormwater infrastructure, public works, facilities, natural and artificial watercourses, and legal drainage systems. O&M of legal drainage systems and existing projects will continue under regular O&M of the entities with jurisdiction over these systems. Projects implemented through the Plan will be operated and maintained by the owner of project as outlined in the project contract for the lifespan of the project, though capital projects may be pursued collaboratively by the partners. O&M plans must be prepared before construction. The plan should include expected maintenance activities, timing of activities, and an inspection schedule.

Information should also be developed on the procedure to be followed if the inspection determines maintenance is required or if required maintenance has not been performed, including potential penalties or enforcement actions. Minnesota State Rules 8400.1700 and 8400.1750 outline program requirements for projects funded through state cost-share programs.

Inspections should be conducted on a regular basis, and after significant weather events, throughout the life of the project to confirm that the O&M plan is being followed and that the project is still performing as designed. Staff conducting inspections should be trained and have the appropriate signing approvals in place. Staff may also choose to hire an outside firm to complete inspections if additional expertise is needed. Site inspections should include a written or electronic record, photographs, a report regarding the status of the practice, and an outline of repairs or maintenance required.

Inspection records should be kept throughout the life of the project to verify maintenance activities. Ultimately, local staff will determine the appropriate level of rigor required in an O&M plan for a given project, provided that all funding requirements are met within the O&M. BWSR's recommended timeframe for inspections are as follows:

- Conservation practices with a minimum effective life of 10 years
  The years that end in 1, 3, and 9 following the certified completion is a recommended minimum
- CIPs having a minimum effective life of 25 years
  The years that end in 1, 8, 17, and 24 following certified completion is a recommended minimum

Some CIPs may warrant more frequent inspections to ensure project effectiveness. This inspection schedule may be developed by the local partners as deemed necessary.

Maintenance MN State Rules 8400.17000
revisor.mn.gov/rules/8400.1700/

Practice Site Inspection MN State Rules 8400.1750
revisor.mn.gov/rules/8400.1750/

Did you know?
If easement encroachments or maintenance requirements are not corrected within the designated time frame, the authorities vested in local government units as well as state and funding agencies will be used to compel compliance.

Did you know?
St. Olaf Lake and Reeds Lake have been identified as waterbodies needing protection.

Outreach + Education Program

The Plan primarily focuses on restoration efforts for lakes and streams, as most of the priority waterbodies within the Watershed are listed as impaired. St. Olaf Lake and Reeds Lake, however, have been identified as waterbodies needing protection. For both restoration and protection efforts, an effective public outreach program is crucial to achieving watershed goals. The success of this Plan relies on individuals changing their behavior and adopting practices that reduce their impact on watershed resources. Success also relies on local government authorities adopting policies that will result in better protection, mitigation of future impacts, and management of watershed resources. To achieve these outcomes, the Partnership will employ a wide range of outreach and engagement activities that are structured around the watershed goals.

Education + Building Relationships: Decision Makers, Landowners, and Other Professionals

Through the outreach program, the partners will be intentional with messaging and strategy to create awareness of and engagement in the restoration and protection efforts needed in each priority area. The two primary goals of the program are:

Educate landowners, decision makers, and other professionals about conservation practices and water resources

Build relationships to enhance the community atmosphere and increase the engagement and level of accountability surrounding BMPs for water resources

Leadership Issue Statement

The first component of the outreach and education program will address the Leadership resource concern identified through the planning process, which is a desired future condition whereby:

> ***"All citizens and decision makers are aware of surface water and groundwater concerns and include sustainable alternatives in decision making that exceeds levels needed to meet goals."***

Level of Surface Water and Groundwater Knowledge

The partners plan to develop materials and schedule events to build the level of knowledge the decision makers retain, while also addressing any questions the decision makers may have. Partners are encouraged to make events interactive and include site visits to create a visual connection to the information. This process may also be used for educating landowners, community members, and other professionals.

Desired Outcome

A desired outcome of this program is that the local decision makers will be equipped with information and confident in their knowledge to make decisions that will improve water resources. With this confidence, decision makers will also be able to navigate difficult conversations with landowners regarding process and regulation changes that may occur. To successfully implement this component of the program, decision makers will need cost benefit analysis information, and additional staff may be necessary to accommodate the workload that this program may create.

Citizen Education + Outreach

Existing efforts within the partnership include:

- Hosting and participating in youth water festivals
- Conservation practice field days
- County fair booths
- Career days
- Peer-to-peer learning program

While these efforts are beneficial, partners would like to expand their efforts to create a larger sphere of understanding within in the community in terms of water resource concerns, which will lead to behavioral changes and BMP implementation for the betterment of the water resources. Additionally, feedback sought throughout the planning process indicated that community members want involvement in project development. Details for specific outreach and educational efforts are outlined in *Table 4.2: Education and Outreach Implementation*. The estimated cost for outreach and education actions to support initiatives set forth in this 10-year Plan is $1,130,460. These actions included but are not limited to:

- Forums
- Workshops
- Educating contractors on multipurpose drainage management
- One-on-one conversations with landowners

These activities are not intended to be stand-alone action items, but instead are intended to be fully integrated into all programming efforts to support the achievement of the Plan's goals.

Did you know?
Outreach efforts in a particular management zone will last three to five years and will be conducted through an adaptive management process.

Landowner Outreach Efforts

One tool the partners plan to use to build relationships with landowners is the development of landowner-led input groups. This program may build upon the existing peer-to-peer learning program and will provide an opportunity for local landowners to take ownership of the resource concerns and contribute to implementation efforts needed to address the problems. Water storage will also be a focus for these groups.

The partners plan to continue fostering relationships with those already implementing conservation practices. Additional focus will be given to developing relationships with landowners without a conservation background, especially those within priority areas. By starting there, the partners will create an educational foundation to build from, gradually increasing the knowledge of area landowners. The intention is that as landowner conservation and water resources knowledge increases, so will the level of ownership to care for the resources.

By engaging landowners, water resource professionals will learn which conservation practices landowners are willing to implement, as well as those practices that landowners have reservations about implementing. Understanding the reservations about specific practices will allow staff to develop outreach materials that explain practice details and address common misunderstandings. Through this process, landowners will gain the knowledge to make informed decisions about implementing conservation practices, while building relationships with local government unit (LGU) staff. This process will also provide feedback for technical staff on which practices should be prioritized for outreach and implementation efforts, resulting in the most efficient use of staff time and resources. As needed, staff will also review state wide research to gain additional insight on soil health and other BMPs and how to increase landowner implementation.

The process the partners will use to conduct landowner outreach efforts will follow BWSR's Prioritize, Target, and Measure framework from which this Plan document is based. Outreach efforts in a particular management zone will last three to five years and will be conducted through an **adaptive management process** that allows for improvements to outreach efforts as program effectiveness is evaluated.

Partners plan to utilize the following process to work with individual landowners and landowner groups to understand and overcome barriers to implementation of nutrient management practices, water storage projects, and other relevant topics.

Adaptive Management Process
Adjusting a process based on new information to ensure the best opportunities for success.

Community Organizations

The partners will support community organizations such as lake associations by promoting their programs and providing technical expertise as appropriate. One example of this partnership may occur through the DNR's Score Your Shore Program. Lake associations choosing to conduct a lake-wide Score Your Shore effort would be supported through outreach efforts and technical guidance from the partners to build community and educate landowners about caring for their lakeshore.

Process + Strategy

Below is an outline of the outreach and education process:

Stakeholders

Landowners in priority area(s) will be identified and informed of program and participation opportunities, such as citizen advisory groups, peer-to-peer learning network, and demonstration sites.

Landowners may participate in a survey to assist LGU staff with identifying barriers to implementation. When existing social science research is available, it will be utilized to assist with this process. Both local and national/international research may be utilized as deemed appropriate to a particular topic.

Timing of outreach will be slightly ahead of BMP efforts identified in the implementation table to encourage increased adoption rates for BMPs when funding is available, as well as the ability to address barriers to the practice prior to implementation.

Barriers + Outreach

Once barriers are identified, outreach efforts will be developed to address the barriers. These efforts may include traditional outreach measures such as mailings and website postings, and innovative outreach measures such as open discussion programs on local radio stations, one-on-one landowner meetings, participation in field days, the creation of landowner-led advisory groups or project teams, and demonstration sites.

Follow-up outreach efforts will be coordinated when appropriate, such as, after one-on-one landowner meetings or advisory group meetings. Though potentially time consuming, this step will be crucial for building trust and relationships with landowners.

For one-on-one landowner meetings, create a relationship building environment by approaching the conversations from the perspective of wanting to gain insight on the landowners' hesitations and discuss potential project concepts with their inputs in mind. This flexibility will also allow for innovative solutions to water quality and quantity concerns that landowners, staff, and decision makers are excited to endorse.

Partner Coordination

Partners are encouraged to coordinate with groups that may be able to provide support and experience to guide the process. Potential groups include the University of Minnesota Extension, WRC, and others trained with social science resources based on existing research. Additional partnerships to consider for these efforts includes GBERBA and the Le Sueur River Network, as well as state and federal agencies, non-profit organizations, and special interest groups. When implementation efforts within the targeted area have been achieved or are exhausted, outreach activities will transition to the next targeted geography. Prior to moving to the next targeted geography, successes should be celebrated and include highlighting the efforts of the project area's landowners in engaging in conservation activities. This celebration effort serves as a transition period but also recognizes the local landowner contributions and concludes the efforts on a positive note.

This plan includes both outreach and public engagement activities. Outreach activities are typically prepared and delivered to various targeted audiences. These activities are structured, and communication is typically one-way with the goal of informing the targeted audience. In comparison, public engagement activities are structured to generate active participation with the targeted audience. This active participation is beneficial to work with the audience and build trust and address questions or concerns.

Another opportunity for partner coordination is the University of Minnesota's Waseca Southern Research and Outreach Center. The Le Sueur River planning partners have not been deeply involved in the work of the Center in the past, however, it would provide opportunities for first hand knowledge of local research that could be shared with landowners and used to improve the programs and projects the partners are implementing. This partnership may also provide opportunities to develop demonstration projects for practices that landowners would like more information about.

Did you know?
Seven of the eight partners within the Watershed have some level of regulatory authority or some authority has been delegated to them.

Land Use Management

According to the suitability of the resource condition, planning for growth and land uses is an important way in which natural resources in the Watershed will be protected against impacts due to unintended consequences of growth. Federal, state, and local land use management control programs provide the regulatory mechanisms that support land use planning activities by outlining compliance criteria for associated land use actions. Seven of the eight partners within the Watershed have some level of regulatory authority or some authority has been delegated to them. This commonality will allow for conversations on regulatory consistency, identification of gaps, and plans to address gaps within the context of regular partner meetings. This section outlines both land use management planning and land use management control programs within the Watershed.

Land Use Management Plans

County and municipal comprehensive or land use management plans are important tools that guide future land management activities to prevent harmful impacts to environmental and economic concerns. These plans indicate where orderly growth will occur and must include goals for protecting open spaces and the environment. The goals and objectives contained in comprehensive plans are reflected in the zoning ordinances, permit standards, and conditional use criteria that counties and municipalities employ to ensure the comprehensive land use management plan goals are obtained. The date of the most recent comprehensive land use management plans for each county is listed in *Table 5.3*.

Table 5.3: Comprehensive Land Use Plans and Adoption Dates

LGU	Adoption Date	Link
Blue Earth County	December 2018	**Check it out here!** *bit.ly/BEC_LandUsePlan*
Faribault County	June 2015	**Check it out here!** *bit.ly/FaribaultCo_LandUsePlan*
Freeborn County	December 2018	**Check it out here!** *bit.ly/FreebornCo_LandUsePlan*
Waseca County	October 2005	**Check it out here!** *bit.ly/WasecaCo_LandUsePlan*

Land Use Management Controls

LGUs, including counties, cities, and townships are responsible for regulating land-use controls and implementing various state programs and legislation, such as the DNR Shoreland Management Program and Minnesota's Wetland Conservation Act.

In addition to local controls, federal and state laws, regulations, and rules are in place that relate to watershed and natural resource management. Regulatory controls rest with the counties, SWCDs, and municipalities. A summary and a table of the regulatory controls most related to watershed management is presented in the upcoming "Existing Regulatory Controls" section.

Recommendations

A key aspect of a successful land use management program is the consistent application of standards and criteria in planning, zoning, and permitting, as well as enforcement of land use management controls. Opportunities exist for land use authorities to achieve consistency and manage planning for the long-term protection of watershed resources in a way that balances economic growth with ecological and environmental needs.

Influencing State Policy

To influence state policies, Partnership members are encouraged and eligible to participate in their respective associations:

- Minnesota Association of Soil and Water Conservation Districts (MASWCD)
- Association of Minnesota Counties (AMC)
- League of Minnesota Cities (LMC)

Each association has a resolution and policy process and platform. The planning partners will review issues of significant importance, and brainstorm potential policies to improve regulatory support on an annual basis. The planning partners will seek opportunities to improve watershed management programs through various channels including local, regional, and statewide organizations. The partners will also advocate for continuing the Clean Water Land and Legacy Amendment past its current expiration of 2034. Partners may also support or engage in efforts to influence state policy through legislative groups and non-governmental organizations when those efforts align with partnership goals and priorities.

DNR Shoreland Management Program
bit.ly/DNR_ShorelandManagement

MN Wetland Conservation Act
bit.ly/MN_WetlandConservation

MASWCD
maswcd.org

AMC
mncounties.org

LMC
lmc.org

Existing Regulatory Controls

LGUs, including counties, cities, and townships, are responsible for regulating land-use controls and implementing various state programs, such as the shoreland program. While federal and state laws, regulations, and rules provide protection of water resources and consistency over a large area, local controls allow for targeted, specific regulation in a particular area. A summary of the Watershed partners' regulatory controls most related to watershed management is provided in the following table and corresponding descriptions *(Table 5.4)*.

Table 5.4: Existing Regulatory Controls

Regulatory Control Category	Blue Earth County	Blue Earth SWCD	Faribault County	Faribault SWCD	Freeborn County	Freeborn SWCD	Waseca County	Waseca SWCD
Agricultural Land Protection							✕	
Buffer Management	✕	✕	✕	✕	✕	✕	✕	✕
Drainage Authority (Public Drainage Systems)	✕		✕		✕		✕	
Extraction + Extractive Use (Mining)	✕		✕		✕		✕	
Feedlots	✕		✕		✕		✕	
Floodplain Management	✕		✕		✕		✕	
Groundwater/Surface Water Use	✕						✕	
Land Use (Comprehensive Land Use Plan)	✕		✕		✕		✕	
Shoreland Management	✕		✕		✕		✕	
Soil Loss/Erosion		✕		✕		✕	✕	
Solid Waste	✕			✕	✕		✕	
Stormwater Runoff	✕						✕	
Subsurface Sewer Treatment System (SSTS)	✕		✕		✕		✕	
Terrestrial Invasive Species							✕	
Urban Expansion/Annexation	✕						✕	
Wetland Management	✕	✕	✕	✕	✕	✕	✕	

Aquatic + Terrestrial Invasive Species

The DNR has regulatory authority over aquatic plants and animals, and terrestrial vertebrates. The Minnesota Department of Agriculture (MDA) has regulatory authority over terrestrial plants (noxious weeds) and plant pests. Each county has an agriculture inspector whose responsibility is to ensure that all laws and rules related to noxious weeds are carried out. There is no counterpart for aquatic plants and animals or terrestrial vertebrates.

Figure 5.2: Buffer

Buffer Management

Buffers are required on public waters and drainage systems (Figure 5.2). According to legislation enacted in 2015, buffers of perennial vegetation are required to be an average of 50 feet, with a minimum of 30 feet on public waters and 16.5 feet on public drainage systems. Flexibility is provided if other practices are implemented and provide the same water quality benefit as a buffer. Exceptions are allowed for:

- Areas that are covered by roads
- Areas that have buildings or other structures
- Areas that are enrolled in the conservation reserve program (CRP)
- Public water accesses
- Municipalities that follow federal and state stormwater requirements

BWSR is the regulatory authority of this program, which is operated at the county level. All the local governmental units (LGUs) have buffer management regulatory controls that have been delegated to them. *Source: Minnesota Statues 103B Water Planning and Project Implementation and 103F.48: Subd.4 Riparian Protection and Water Quality Practices: Local Water Sources; Riparian Protection*

Buffer

A buffer, also known as a riparian filter strip, is vegetated land adjacent to a stream, river, lake, or wetland.

Did you know?

Buffers of perennial vegetation are required to be an average of 50 feet, with a minimum of 30 feet on public waters and 16.5 feet on public drainage systems.

Water Planning and Project Implementation MN §103B

revisor.mn.gov/statutes/cite/103B

Riparian Protection and Water Quality Practices MN §103F.48

revisor.mn.gov/statutes/cite/103F.48

National Historic Preservation Act
bit.ly/NHPA_1966

Minnesota Statute §138
revisor.mn.gov/statutes/cite/138

Protection of Threatened and Endangered Species MN §84.0895
revisor.mn.gov/statutes/cite/84.0895

Did you know?
There are 13 Wildlife Protection areas (WPAs) within the Watershed that equate to 2,173 acres.

Cultural Resources

The National Historic Preservation Act (NHPA) of 1966 governs the protection of cultural resources. The NHPA requires federal agencies to consider the effect of their activities on historic properties. In practice, this is achieved in partnership with state and tribal historic preservation offices. Minn. Stat. §§ 138 designates the Commissioner of the Department of Administration as the Historic Preservation Officer and assigns responsibility for the program with the State Historic Preservation Office (SHPO).

The Minnesota Field Archaeology Act mandates licensing for archaeological work on non-federal public land and requires state agencies to coordinate with the state archaeologist, SHPO, and the Minnesota Indian Affairs Council for review when working in areas of known or suspected archaeological sites.

The Minnesota Historic Sites Act establishes the State Historic Sites Network and the State Register of Historic Places and requires state agencies to consult with the SHPO before undertaking or licensing projects that may affect listed properties.

Other pertinent regulations come from The Minnesota Private Cemeteries Act, which protects all human remains on public or private land in Minnesota, the Minnesota Environmental Rights Act, and Minnesota Environmental Quality Board rules regarding environmental assessment worksheets (EAW) and environmental impact statements (EIS).
Source: National Historic Preservation Act

Endangered + Threatened Species

Minn. Stat. §§ 84.0895 governs protection of threatened and endangered species and defines species with special protection as follows: endangered species are those threatened with extinction throughout all or a significant portion of their range; threatened species are those likely to become endangered within the foreseeable future throughout all or a significant portion of their range; and species of special concern are those that are not endangered or threatened, but are extremely uncommon in Minnesota or have unique or highly specific habitat requirements and deserve careful monitoring.

DNR is required to adopt rules designating species as endangered, threatened, or a species of special concern. Species are also protected at the federal level and their protection status is determined by the U.S. Fish and Wildlife Service (USFWS). See *Table 1.3* in Land and Water Resources section of this Plan.

Extraction + Extractive Use

Counties are responsible for administering land-use controls for **extraction**. Extractive use means the use of land for the removal of surface or subsurface sand, gravel, rock, industrial minerals, a nonmetallic mineral, or peat not regulated by Minn. Stat. §§ 93.44—93.51 and amendments thereto. Extractive Use mining may include construction sand and gravel used in:

- Concrete
- Aggregates
- Concrete products
- Asphalt
- Road base
- Fill
- Snow and ice control
- Other miscellaneous uses

Peat, black dirt, rock, and other soils are used extensively for landscaping.
Source: Minnesota Statute Chapter 93. Mineral Lands

Feedlots

The MPCA administers the feedlot regulations in Minnesota. Additionally, counties in the state may be delegated by the MPCA to administer the program for feedlots that are not required to have a state or federal permit. Blue Earth, Faribault, Freeborn, and Waseca counties are delegated counties and as such manage their programs in partnership with the MPCA. Each program must include:

- Permitting
- Inspection
- Registration

Each county intends to maintain delegated authority during the plan implementation.
Source: Update to Source: Minnesota Administrative Rules Chapter 7020, Animal Feedlots

Floodplain Management

The Federal Emergency Management Agency (FEMA) administers federal floodplain management, mapping, insurance, and flood-assistance programs. The DNR oversees the state program and administers the National Flood Insurance Program for the state. Local zoning regulations identify permitted land use in the floodway, flood fringe, and floodplain. Digital Flood Insurance Rate Maps (DFIRMs) have been completed for Freeborn County.

Extraction
The use of land for the removal of surface or subsurface sand, gravel, rock, industrial minerals, a nonmetallic mineral, or peat

Minnesota Statute Mineral Lands MN §93
revisor.mn.gov/statutes/cite/93

Minnesota Rules Chapter Animal Feedlots MN §7020
revisor.mn.gov/rules/7020/

Did you know?
Peat, black dirt, rock, and other soils are used extensively for landscaping.

Municipal Separate Storm Sewers System (MS4s)
A municipal separate storm sewer system (MS4) is a conveyance or system of conveyances

Appropriation
The action of taking something for one's own use

Historical Societies; Sites; Archives; Archeology; Folklife MN §138
revisor.mn.gov/statutes/cite/103G

Protection of Threatened and Endangered Species MN §84.0895
revisor.mn.gov/statutes/cite/103H

Municipal Separate Storm Sewer Systems (MS4)

Discharges from certain **municipal separate storm sewers system (MS4s)** are regulated under the National Pollutant Discharge Elimination System (NPDES) which was developed because of the federal Clean Water Act. There are three MS4 systems wholly or partially within the Watershed:

- Mankato (partial)
- Waseca (partial)
- Eagle Lake

Compliance with MS4 regulations is managed on the state level through the MPCA.

Groundwater/Surface Water Use

A water use (**appropriation**) permit from the DNR is required for all users withdrawing more than 10,000 gallons of water per day or 1 million gallons per year.

The DNR is required to manage water resources to ensure an adequate supply to meet long-range seasonal requirements for the following purposes:

- Domestic
- Agricultural
- Fish and wildlife
- Recreational
- Power
- Navigation
- And quality control

SWCDs and planning and zoning offices are offered the opportunity to comment on these permit applications.

Additionally, Blue Earth and Waseca Counties have groundwater and surface water use ordinances in place. The Blue Earth County Water Supply Well ordinance regulates the construction, reconstruction, and sealing of water wells and is adopted pursuant to Minnesota State Statutes 103I.111, 145A.05, subd. 8, and 145A.07. The Waseca County Water Supply Well Ordinance provides the minimum standards for well regulations via a local program. Additional details may be found on the County's website.
Source: MN Statute 103G for appropriation; 103H, 1989 Groundwater Act

Point Source Pollution Regulations

Mandates regulating point sources of pollution were a major component of the Clean Water Act which was passed in 1972. The EPA is responsible for regulating point sources through the NPDES. The MPCA implements this program, which includes municipal sewage treatment plants, industrial discharges, stormwater, and concentrated animal feeding operations (CAFOs) at the state level. Minnesota has general permits that govern activities such as confined animal feedlots and the standards are outlined in state rule. *Source: MN Statutes 115 and 116, as amended, and MN Rules Chapters 7001, 7050, 7060 and 7090; MN Rules Chapters 7050 and 7052*

Public Drainage Systems

Artificial drainage (subsurface drainage tile and open ditches) was first used to increase the amount of arable land. Over the past several decades, more extensive tiling (**pattern tiling**) has been used to optimize crop production by ensuring soil moisture does not prevent planting at the optimal time or create undesired crop stress due to excess soil/surface moisture.

Public drainage systems are publicly managed and provide outlets for private tile and ditches. Management of public drainage systems by drainage authorities is governed by Minn. Stat. §§ 103E. Drainage authorities work with landowners to ensure adequate drainage and enforcement of relevant regulations (e.g., buffer requirements). Blue Earth, Faribault, Freeborn, and Waseca counties all serve as the Drainage Authority for public drainage systems within their boundaries. None of these entities have regulations for agricultural tiling. *Source: Minnesota Statutes Chapter 103E. Drainage (2021)*

Public Waters

The DNR administers the Public Waters Work Permit Program, regulating activities below the ordinary high-water level (OHWL) in public waters. Any activities that may change the course, current, or cross-section of a public water may require a Public Waters Work permit, and permits must be received prior to work beginning. Activities that may require this permit include, but are not limited to:

- Excavation
- Dredging
- Filling
- Installing structures
- Implementing shoreland protection measures

Pattern Tiling

Farmers install tile in agricultural fields to make the soil conditions more uniform, dry up wet spots, reduce erosion and prevent crop roots from rotting during wet periods. This improves crop yields and prevents compaction of the soil; however, there are also adverse impacts that affect water quality and quality.

Minnesota Statute Pollution Control Agency MN §116

revisor.mn.gov/statutes/cite/116

Minnesota Statute Drainage MN §103E

revisor.mn.gov/statutes/cite/103E

Minnesota Statute Protection of Water Resources MN §103F

revisor.mn.gov/statutes/cite/103F

Minnesota Statute Water Pollution Control; Sanitary Districts MN §115

revisor.mn.gov/statutes/cite/115

Minnesota Administrative Rules Chapter §4720.5100

revisor.mn.gov/rules/4720.5100

Shoreland Management

Minnesota has shoreland management standards that are identified in rules and are overseen by the DNR. Local governments are required to adopt land-use controls that protect shorelands along rivers and lakes. Ordinances may be more restrictive depending on the local government units. Within the Watershed, all four counties (Blue Earth, Faribault, Freeborn, and Waseca) have Shoreland Management ordinances. *Source: MN Statute 103F and MN Rules 6120.2500–3900*

Subsurface Sewage Treatment Systems (SSTS)

The goal of the Subsurface Sewage Treatment Systems (SSTS) program is to protect the public health and the environment by adequately dispersing and treating domestic sewage from dwellings or other establishments that generate volumes less than 10,000 gallons per day. SSTS requirements are adopted and enforced locally.

Counties in the Le Sueur River Watershed may have grants and or low interest loans available for SSTS upgrades for individuals that meet limited income qualifications. *Source: MN Statutes 115.55 and 115.56, MN Rules Chapters 7080, 7081, 7082, 7083.*

Waste Management

Waste management permitting and regulatory programs are implemented by county solid waste programs in accordance with MPCA statutes. These programs include:

- Building disposal
- Hazardous waste
- Storage tanks
- Solid waste

Local land-use and zoning controls may regulate whether waste storage and handling facilities are compatible.

Waste from areas within the watershed is disposed of at the demo landfill in Freeborn County. The Freeborn County House Hold Hazardous Waste Facility in Albert Lea accepts household hazardous waste. Blue Earth, Faribault, Freeborn, and Waseca counties have a solid waste ordinance. *Source: MN Statutes 115.55, MN Rules Chapters 7001, 7035, 7045, 7150, 7151, 9215, 9220.*

Wellhead Protection

Protection of community drinking water sources is accomplished using wellhead protection to identify areas in a well recharge zone that are susceptible to contamination. Wellhead protection plans are written according to the 1986 amendments to the federal Safe Drinking Water Act. There are 18 (19 if including Mankato) wellhead protection areas within the Watershed. *Source: Minnesota Administrative Rules Chapter 4720.5100 Wellhead Protection*

Wetland Management

There are regulatory controls that govern the discharge of dredged or fill materials into waters of the United States, including wetlands. USACE and the Environmental Protection Agency (EPA) share responsibilities for implementing Section 404 of the Clean Water Act.

Section 401 of the Clean Water Act requires certification of water quality compliance measures. This certification is a requirement of various federal permit programs and is implemented at the state level by the Minnesota Pollution Control Agency (MPCA).

U.S. Department of Agriculture (USDA) implements the Federal Farm Bill policies regarding draining or filling wetlands for farm program participation. Minnesota also has the Wetland Conservation Act (WCA) that is intended to result in no-net loss of wetlands through various mitigation, replacement, and permitting activities. BWSR administers the program, however, the program is implemented through local governments. The WCA entities within the planning area are:

- Blue Earth County
- City of Mankato
- Waseca County
- City of Waseca
- Faribault County SWCD
- Freeborn County

Source: MN Statute portions of 103B and 103G; MN State Rule Chapter 8420

Monitoring Program

A vital component of watershed management is understanding watershed conditions and trends. It is also important to gain knowledge about lesser understood resources. Data obtained through research and monitoring programs provides the information that allows implementation actions to be adapted and tailored to meet changing conditions. This section presents information about current monitoring and data gathering efforts, identifies potential future data gathering and research efforts, and provides information about the organizations and programs that are involved in monitoring and research efforts.

Data collected through locally led efforts will use industry standard methods and protocols and will be integrated in locally led modeling and resource management projects. Data acquired through local efforts may be submitted to the appropriate state agency. State agencies are responsible for updating state sponsored modeling and resource assessment efforts, such as the Hydrological Simulation Program–Fortran (HSPF) and Watershed Restoration and Protection Strategy (WRAPS) programs, with the data acquired through local efforts.

Minnesota Statute Water Planning and Project Implementation MN §103B

revisor.mn.gov/statutes/cite/103B

Minnesota Statute Waters of the State MN §103G

revisor.mn.gov/statutes/cite/103G

Minnesota State Wetland Conservation Rules Chapter §8420

revisor.mn.gov/rules/8420/

Watershed Pollutant Load Monitoring Network Data Viewer

bit.ly/watershedPollutantLoadMon

Surface Water Data Access

bit.ly/surfaceWaterDataAccess

Surface Water Healthier Watersheds: Tracking the Actions Taken

bit.ly/healthierwatersheds_mn

Current Monitoring

Within the Watershed, much of the monitoring is conducted by state agencies and citizen volunteers with Waseca County also monitoring a couple of key sites.

Surface Water

Streams

- The MPCA's Watershed Pollutant Load Monitoring Network (WPLMN) measures and compares data on pollutant loads from Minnesota's rivers and streams and tracks water quality trends. Data are collected along major river main stems, at major watershed (i.e., HUC-8) outlets to major rivers, and in several subwatersheds. Seven long-term sites are monitored in the Watershed. *Source: public.tableau.com/app/profile/mpca.data.services/viz/WatershedPollutantLoadMonitoringNetworkWPLMNDataViewer/WPLMNBrowser*
- The MPCA conducts biological and stream monitoring roughly every 10 years as a part of the Intensive Watershed Approach. The first and second round of monitoring in the Watershed began in 2008 and 2018 respectively.
- The MPCA's Volunteer Water Monitoring Program provides records of water body transparency. This program relies on a network of volunteers who measure transparency approximately monthly.
- Discharges from permitted municipal and industrial wastewater sources are reported through discharge monitoring records; these records are used to evaluate compliance with federal National Pollutant Discharge Elimination System (NPDES) and State Disposal System (SDS) permits. Summaries of discharge monitoring records are available through the MPCA's Wastewater Data Browser.
- BWSR and United States Department of Agriculture track the locations of BMP installation. BWSR houses data from implementation projects via eLINK. Tillage transects and crop residue data are collected periodically and reported through the Minnesota Tillage Transect Survey Data Center by the USDA. BMP tracking information is readily available through the MPCA's "Healthier Watersheds" webpage.
- The MDA conducts pesticide monitoring in three locations in the Watershed; the Le Sueur River, Little Cobb River, and Beauford Ditch/Blue Earth CD 86. The samples are analyzed for approximately 180 pesticides and associated degradates. The data collected is used to identify compounds and/or places where concentrations may exceed established water quality benchmarks, guidance values, and/or standards.
- Water quality monitoring data collection through the programs described above includes analysis of a variety of potential pollutants and includes phosphorus, ortho-phosphorus, total suspended solids, nitrate and nitrite, dissolved oxygen, temperature, and pesticides.
- Surface Water Data Access tool allows users to search and view waterbodies and their associated monitoring stations. *Source: mpca.maps.arcgis.com/apps/webappviewer/index.html?id=c3ad23220f60416fadcc117f82ba05e3*

Surface Water (Continued)

Lakes

- Water monitoring data includes analysis of a variety of potential pollutants with a focus on phosphorus, total suspended solids, water clarity, dissolved oxygen, chlorophyll a, and temperature.
- The MPCA conducts lake monitoring roughly every 10 years as a part of the intensive watershed approach. The first and second round of monitoring in the Watershed began in 2008 and 2018 respectively. Impairments in lakes for recreational use are primarily caused by high levels of internal and external phosphorus loading. Response variables associated with phosphorus loading are chlorophyll-a (chl-a) and Secchi depth.
- The state's Volunteer Monitoring Program provides useful information on lake water clarity which is used to calculate long-term water clarity trends. St. Olaf, Reeds, and Elysian lakes are all monitored by volunteers through this program.
- The DNR leads a long-term, collaborative monitoring effort focused on 25 Sentinel Lakes in the state. The program is designed to understand and predict the consequences of land use and climate change on lake habitats in a representative sample of the state's lakes. This program involves long-term monitoring of water chemistry, fisheries, zoo plankton, phytoplankton, habitat, groundwater and other factors in the lakes, along with detailed assessment of watershed and related characteristics. The MPCA is a partner in this effort and focused on collecting and assessing lake water quality data. Madison and St. Olaf lakes in the Watershed are included in this study. *Source: dnr.state.mn.us/fisheries/slice/index.html*

Climate

- Periodic summaries of recent and long-term weather-reporting station data may be helpful in modifying monitoring activities and interpreting data to reflect weather variability. A climate summary is available from the DNR. *Source: files.dnr.state.mn.us/natural_resources/water/watersheds/tool/watersheds/climate_summary_major_32.pdf*

Monitoring Minnesota's Changing Lakes
bit.ly/mnChangingLakes

Climate Summary for Watersheds
bit.ly/climateSummaryForWatersheds

Minnesota Climatology Office
climateapps.dnr.state.mn.us/index.htm

Midwestern Regional Climate Center
mrcc.purdue.edu

Groundwater

Source: GRAPS, 2021

- Numerous organizations are involved in monitoring groundwater quality and quality. *Figure 5.3* provides a graphical overview of the state agencies involved in monitoring groundwater.
- The MPCA monitors water quality conditions in two ambient groundwater monitoring wells within the Watershed.
- The DNR monitors groundwater levels in two wells within the Watershed. One well has been monitored since 1980 and the other well has been monitored since 2000.
- The MDA administers the Township Testing Program (TTP) which focuses on townships considered vulnerable to groundwater contamination and have significant row crop production.
- The MDH monitors for arsenic on every new well installed.
- Public water suppliers frequently monitor for contaminants.

Habitat

- As part of the MPCA's Intensive Watershed Monitoring Program, rivers and select lakes are tested for fish and invertebrate population abundance and diversity. The resulting assessment is an index of biologic integrity. If the biological populations are impaired, streams and lakes are assessed to determine what is causing the stress to the biologic community. Stressors include a loss of habitat, low dissolved oxygen (DO), excessive sediment, altered hydrology, or a lack of stream connectivity.
- The DNR's Watershed Health Assessment Framework provides information throughout the Watershed on perennial cover, wetland loss, soil erosion susceptibility, terrestrial habitat, biological diversity, and many other upland items. Additionally, the National Wetland Inventory (NWI) existing wetlands and Ducks Unlimited have studied where restorable wetlands exist.
- The DNR fisheries department conducts fish-population surveys on most lakes on a three- to six-year rotation depending on lake size, public access, and fisheries management goals, objectives, and projects.

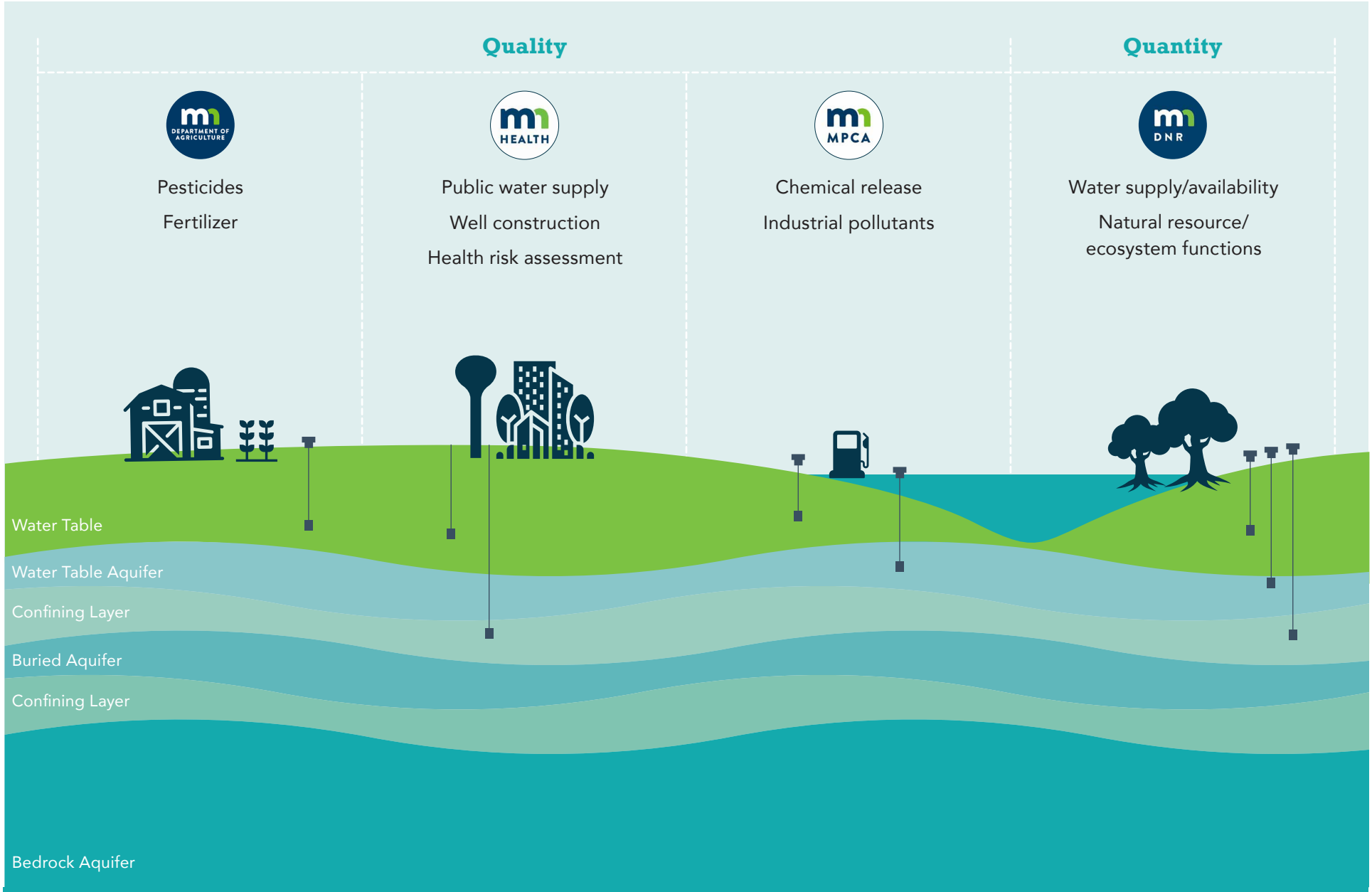


Figure 5.3: Minnesota State Agency Roles in Groundwater

Future Monitoring Considerations, Resources, and Goals

Additional data, information, and studies are needed to better assess watershed conditions, detect trends, and fill data gaps. These efforts, aimed to better quantify watershed conditions, will provide the information needed for future restoration and protection efforts. A summary of potential monitoring, data acquisition, and studies anticipated over the 10-year plan period are indicated in *Table 5.5*. Additional details for these monitoring activities are provided in the implementation schedule located in *Section 4*.

Table 5.5: Future Monitoring and Data Collection Efforts

Area	Potential Future Efforts
Waterbodies	• Water quality monitoring • Increase citizen lake monitoring program participation • Feasibility studies for streambank stabilization, restoration, or remeanders
Water Quantity, Rate, and Flooding	• Feasibility analysis and design of farmable storage area program • Use Multi-purpose Drainage Management plans to partner with drainage authorities • Evaluate potential floodplain connection projects • Inform water quantity and rate implementation planning • Water storage project feasibility
Groundwater	• Septic system compliance inventory • Well inventory • Evaluate groundwater and surface water relationships with groundwater dependent lakes, and their impact on water quality and quantity.
Shoreland	• Update lake management plans, in-lake management feasibility studies

06

PLAN ADMINISTRATION AND COORDINATION

PLAN ADMINISTRATION AND COORDINATION

Introduction

This section describes how the Partnership will work together, as well as how the Plan will be administered, implemented, monitored, and funded.

Decision Making and Staffing

Organizational Structure and Formal Agreements

A Memorandum of Agreement (MOA) was established by the local units of government for the development of the Le Sueur River Comprehensive Watershed Management Plan. The Policy Committee decided to form a Joint Powers Collaboration upon plan adoption. The Joint Powers Collaboration will develop a new agreement with appropriate legal obligations and corresponding content. The agreement will clearly establish the roles and responsibilities for all signing entities to implement the Plan. Following plan adoption, the Policy Committee will be known as the Policy Advisory Committee (PAC) ,

The Joint Powers Collaboration Agreement will not establish a Joint Powers Entity but sets the terms and provisions by which the parties "may jointly or cooperatively exercise any power common to the contracting parties or any similar powers, including those which are the same except for the territorial limits within which they may be exercised." *(Minnesota Statues § 471.59)*. The draft agreement does not include a financial obligation, but rather an ability to share resources.

Policy Advisory Committee (PAC)
One appointed representative from each participating entity Board

Le Sueur Implementation Team (LIT)
Local technical staff from participating entities implementing the Plan

Technical Advisory Committee (TAC)
Members of local, state, and federal entities, non-profit organizations, lake association members, and citizens

Committees

The committees that have been created for the development of this plan will continue in largely the same fashion with slight changes to their naming and composition and will carry out the coordinated implementation of the Plan. The parties agree to maintain a **Policy Advisory Committee (PAC)**, **Le Sueur Implementation Team (LIT)**, and **Technical Advisory Committee (TAC)**. The PAC will be made up of one appointed representative from each governing entity. The PAC's role will include providing oversight of plan implementation, providing recommendations to approve grant applications, grant agreements, interim reports, payment of invoices, and entering professional contracts. The PAC shall also provide recommendations of approval of an annual work plan and annual budget consisting of an itemized statement of the Plan, revenues and expenses for the ensuing calendar years, and shall be presented to the respective governing entities that are represented on the by their respective PAC and LIT members. The Le Sueur Implementation Team will be made up of local staff which will consist of, but may not be limited to, local county water planners, technical staff, and SWCD staff. The Le Sueur Implementation Team will be tasked with the logistical day-to-day decision making in implementing the Plan and preparation of the draft annual work plan and budget which will be presented to the PAC. Members of the TAC are appointed by the PAC and will include local and state agency staff to provide support and make recommendations on implementation of the Plan as needed. To maintain consistency between the planning process and plan implementation, many or all of the same members that served on the TAC during the planning process may continue to serve on the TAC during plan implementation.

Coordination of Shared Services

The Partnership recognizes the benefit of obtaining efficiencies through shared service delivery. Throughout the implementation of the Plan, and particularly at the biennial planning and five-year evaluation benchmarks, the committees will assess appropriate use of shared services to ensure goals are achieved. Potential opportunities for shared services include but are not bound or limited to a partnership focused education and outreach staff member, partnership website and other web-based tools, and the use of Job Approval Authority sign-offs across political boundaries within the Watershed.

Collaboration with Other Units of Government

The Policy Advisory Committee and staff will actively seek opportunities for early coordination and collaboration with other units of government including cities, townships, federal agencies, and special purpose joint powers boards. Governmental units, including drainage authorities, that are not part of the Joint Powers Collaboration will be invited to participate in implementation activities where those activities are relevant to their own goals or implementation measures. Collaboration with state agencies such as BWSR, MPCA, MDH, MDA, and DNR are critical for executing the programs and goals of the plan. Federal government partners, including the United States Fish and Wildlife Service (USFWS), United States Army Corp of Engineers (USACE), United States Geologic Survey (USGS), Natural Resources Conservation Service (NRCS), and Farm Service Agency (FSA), are not required participants, but their programs and staff expertise are necessary components to fulfilling plan goals. The LIT will utilize opportunities to collaborate with federal partners as they arise, specifically in terms of fulfilling federal Farm Bill requirements, such as convening the Local Working Groups.

Collaboration with Others

To a large degree, the success in achieving the Plan goals will depend on the local support that drives its implementation. The partnership is committed to working with nongovernmental entities including civic groups, nonprofit entities, private businesses, volunteers, individuals, and foundations, many of which are already involved in protecting and improving resources in the Watershed.

Work Plan Development

Work plan development starts with a review of recent implementation efforts completed by the partners. The goal of this review will be to achieve meaningful results while considering existing conditions and circumstances.

Following this review, the LIT will develop a draft biennial watershed work plan and budget based on the timing of actions identified in the implementation section of this plan in addition to the amount of available funding. In addition to developing the biennial watershed work plan and budget, the LIT will also biennially review the budget and implementation schedule for the BWSR funding request. Within the biennial work plan and budget, the LIT will clearly identify the implementation activities and corresponding funding for each year. This plan will focus on all of the work the partners plan to accomplish from the Plan over the biennium, based on plan priorities, the targeted implementation schedule, and the implementation programs identified in the plan. Further refinement will occur to create a work plan and budget specific to the watershed based implementation funding, which will be submitted as a funding request to BWSR every two to three years. The TAC will be provided an opportunity to review and provide insight and support to the work plans. The LIT will review the work plan annually to determine whether adaptive management is needed to accommodate local budgeting and staffing decisions.

The LIT will present the draft work plan and budget to the PAC for recommendation of approval. Upon review, the LIT will determine if changes will be made to the work plan based on PAC recommendations.

The LIT will present the draft work plan and budget to the PAC and each partners' board to review and solicit feedback as outlined in the established agreement and associated bylaws. The process for approval of the work plan will also be outline in said agreement. The approved work plans will be referenced when submitting the biennial funding requests to BWSR.

Potential Partners

- Greater Blue Earth River Basin Alliance (GBERBA)
- Le Sueur River Watershed Network
- University of Minnesota Waseca Southern Research and Outreach Center
- Minnesota State University, Mankato, Water Resources Center

Plan Amendments

This Plan is in effect for 10 years after obtaining state approval and local adoption. The activities described in this Plan are voluntary, not prescriptive, and are meant to allow flexibility in implementation. During the time that this Plan is in effect, new data will be generated that will provide a better understanding of watershed issues and solutions. Administrative authorities, state policies, and resource concerns may also change. Changes, additions, or clarifications to the Plan may be necessary to address the new and changing information.

If amendments are required or requested by a member of the Joint Powers Collaboration, the PAC will initiate a plan amendment process following the procedures outlined in the Joint Powers Collaboration agreement and corresponding bylaws, as well as BWSR and/or State requirements. Any party to the agreement may recommend a plan amendment at the direction of their respective board. Any such recommendation will be reviewed by the Le Sueur Implementation Team, whose findings will be provided to the PAC. The Partnership will consult with their BWSR staff to determine if an amendment is needed when revisions are being considered. BWSR will approve amendments as appropriate, and the PAC will send the amendment to each of their respective boards for adoption.

Any proposed amendment must undergo a 60-day comment period by all parties to the agreement and all ex-officio members of the PAC. The amendment must include a copy of plan pages showing stricken, added, and changed text and figures. Changes may be shown with callouts, notes, or other means. The amendment will be approved as outlined in the Joint Powers Collaboration Agreement and associated bylaws. After approval the amended Plan will be distributed to all parties and ex-officio members of the Le Sueur Implementation Team, TAC, and PAC.

Assessment and Evaluation

Accomplishment Assessment

The Partnership will use the annual work plan and budget as the baseline for developing a tracking sheet for implementation actions and costs throughout the planning period. The tracking sheet will align anticipated outcomes contained in the work plan to measure progress towards planned implementation goals by logging completed projects and pollution reduction numbers that will be used along with the work plan and budget. An annual assessment of progress will be made at the end of the calendar year to evaluate progress and adjust as needed based on identified implementation barriers, changes in capacity, and the adoption and success of practices and projects. An annual summary of work will also be conducted at this time in conjunction with the annual grant reporting, which may incorporate partner updates as pertinent, information on how projects were executed, highlight shared services and collaborative efforts, and may be formatted for demonstrating plan progress to stakeholders and citizens.

Progress towards overall measurable goal achievement will include tracking numerical goals, such as the number of septic system fixes; estimating pollution reductions using the spreadsheet calculator, models and tools; or verifying outcomes using evidence-based data collection.

Five Year Evaluation

Every five years, the Joint Powers Collaboration entities will conduct an evaluation of overall progress towards the 10-year goals and desired future conditions. The evaluation will begin with an assessment of new data, information, updated models, studies, and trends. This information will be used to evaluate whether the Plan's established measurable goals and priority issues still align with the outcomes of the updated information. The Partnership will also reach out to state agency partners to determine whether they have gathered new information or studies that would be beneficial to include in the evaluation process. In addition to reviewing updated data, an assessment will be made as to whether the 10-year goals will be met with the current pace of progress. The conclusions of these reviews will determine if additional resources are needed, or if the delivery of services should be adjusted to strengthen implementation efforts. If these changes are deemed necessary, the PAC will initiate a plan amendment process.

Partnership Assessment

The partnership will regularly assess their performance in implementing the programs and activities in the Plan and achieving goals throughout the life of the Plan in informal and formal ways. Informally, the Partnership will adjust as needed to leverage the partnership's collective and individual strengths as funding and collaborative opportunities arise. Formally, the Partnership and the PAC will assess the degree to which goals were achieved and how to best organize and align efforts to fulfill Plan goals on a biennial basis. Any revisions to the roles and responsibilities amongst the Joint Powers Collaboration entities will be reflected in the work plan and associated agreements.

Reporting

The fiscal agent is responsible for submitting all required grant reports and completing annual grant reporting requirements for the Plan as required by state law and policy. The Plan Coordinator and the other Joint Powers Collaboration entities will assist in the development of the required reports and will continue to file their own reports as required. Required annual reporting for LGUs will provide the baseline data used to generate the State of the Watershed report, which will be used to update stakeholders and citizens. The format of this report will be determined by the LIT.

Funding

The following sections discuss current local funding, funding needs, and potential funding sources. The extent to which the Plan activities can be accomplished is dependent on the level of funding that is available, as well as the capacity of the staff.

Current local funding and the estimated annual cost to implement the Plan is outlined in *Table 6.1*. The baseline funding outlines existing dollars available in the Watershed for implementation. A majority the baseline funding includes but is not limited to funds for state cost share, capacity, conservation delivery, buffer law, easement delivery, wetland conservation act, shoreland management, SSTS, feedlot inspection, AIS, operations and maintenance, and regulatory funds. Funds not considered include landowner contributions and efforts funded through federal programs. It is assumed that the current level of investment by each LGU will remain the same during the Plan implementation. On average, the watershed spends $1,978,100 per year on non-point source implementation. The watershed is anticipated to receive $4,302,940 in additional implementation funding through watershed-based implementation funding (WBIF) over the 10-year lifetime of the this plan.

The estimated cost to implement the plan is $29,542,100. Details on programs activities, timelines, outcomes are provided in the Best Management Practices *(Table 4.1)*; Outreach and Education *(Table 4.2)*; and Data, Studies, and Monitoring *(Table 4.3)* implementation tables in Section 4.

Table 6.1: Summary of Plan Costs

Implementation Program	Base Funding	Anticipated WBIF	Cost to Fully Implement Plan
Best Management Practice	$18,791,950	$4,087,793	$28,157,200
Outreach and Education	$791,240	$172,118	$1,130,460
Data, Studies, Monitoring	$197,810	$43,029	$314,440
Total	**$19,781,000**	**$4,302,940**	**$29,602,100**

Local Funding

Local funds may include general funds, landowner contributions, or are those which are derived from the local tax base, including in-kind contribution of personnel whose position is funded through locally derived funds. Local funds will be used to fund local priorities and programs such as when these local priorities are misaligned with state or federal funded program requirements as well as to provide required or additional match for grant programs. A listing of some of the funding mechanisms will be explored as appropriate. *Table 6.2* below shows applicable local funding sources as identified in the BWSR One Watershed, One Plan Guidebook.

Table 6.2: Local Funding

Citation	Applies To	Summary
§103B.251	Counties	May certify for payment by the county all or any part of the cost of a capital improvement contained in the capital improvement program of plans developed in accordance with §103B.231. Counties may issue general obligation bonds to pay all or part of the cost of project. The county may pay the principal and interest on the bonds by levying a tax on all property located in the watershed or subwatershed in which the bonds are issued. Loans from counties to watershed districts for the purposes of implementing this section are not subject to the loan limit set forth in §103D.335
§103E.601	Drainage Authorities	**Drainage System Costs:** Funding of all costs related to construction, maintenance, and improvement of drainage systems is apportioned to property owners within the drainage system based on the benefits received from the improved drainage.
§103E.011 Subd. 5		**External Sources of Funding:** A drainage authority can accept and use funds from sources other than assessments from benefited landowners for the purposes of flood control, wetland restoration, or water quality improvements. Additionally, 103E.015, Subd.1a requires drainage authorities to investigate potential use of external funding for the purposes identified in 103E.011, Subd. 5.
§103B.331 Subd. 3 & 4	Counties	(3) May charge users for services provided by the county necessary to implement the local water management plan. (4) May establish one or more special taxing districts within the county and issue bonds to finance capital improvements under the Comprehensive Local Water Management Act. After adoption of the resolution, a county may annually levy a tax on all taxable property in the district.
103B.555 Subd. 1 & 3		(1) May establish a Lake Improvement District and impose service charges on the users of lake improvement district services within the district. May levy an ad valorem tax solely on property within the lake improvement district for projects of special benefit to the district; may impose or issue any combination of service charges, special assessments, obligations, and taxes. (3) A tax under Subd. 1 may be in addition to amounts levied on all taxable property in the county for the same/similar purposes.
§103B.355		**Water Planning Authority for Special Projects:** Counties have authority to levy funds for priority projects and to assist SWCDs with program implementation.
§103C.331 Subd. 16	County boards on behalf of SWCDs	May levy an annual tax on all taxable real property in the district for the amount that the board determines is necessary to meet the requirements of the district.
§462.358 Subd. 2b(c)	Municipalities	May accept a cash fee for lots created in a subdivision or redevelopment that will be served by municipal sanitary sewer and water service or community septic and private wells. May charge dedication fees for the acquisition and development or improvement of wetlands and open space based on an approved parks and open space plan.
§444.075		**Stormwater Utility Fee:** Municipalities (home rule charter or statutory city that is not in an orderly annexation process) are authorized to collect stormwater utility fees to build, repair, operate, and maintain stormwater management systems. Stormwater utility fees must be set using reasonable calculations based on runoff volume or pollution quantities, property classification, or an equitable basis.

State Funding

The state of Minnesota has the responsibility to fund watershed management programs through various capacities, programs, and agencies. The Nonpoint Priority Funding Plan outlines a criteria-based process to prioritize Clean Water Fund investments. These high-level state priority criteria include:

- Restore those waters that are closest to meeting state water quality standards,
- Protect those high-quality unimpaired waters at greatest risk of becoming impaired, and
- Restore and protect water resources for public use and public health, including drinking water.

Funding for capital improvement projects may be obtained through legislative appropriations directly or through state agency programs that have bond funds available, such as RIM. Grants are also available from BWSR, MPCA, DNR, MDH, and MDA to fund programs, practices, and projects. Grants are also available through legislative commissions, such as the Lessard-Sams Outdoor Heritage Council which funds habitat projects, and the Legislative and Citizens Commission on Minnesota Resources Environmental Trust Fund, which funds research and innovation projects. State revolving fund loans can be obtained from the MPCA and MDA. These funding sources will be pursued during implementation of this plan to provide supplemental funding for projects as deemed appropriate or necessary.

Federal Funding

Federal agencies expected to partner, and from which funds will be sought, include US Forest Service (USFS), USFWS, USACE, USGS, NRCS, FSA, and EPA. Dam improvement programs that address habitat and connectivity concerns may involve partnering with USACE. USGS will likely provide support for data acquisition and monitoring programs while USFWS may provide land retirement program funds.

Nonregulatory Ecosystem Service Programs

Most ecosystem service trading programs are facilitated through regulatory permits and programs, such as wetland banking. However, demand is increasing to provide ecosystem service grants that are not regulatory in scope. Funding initiatives that may be available could focus on increasing or protecting habitat for particular species, such as endangered or threatened species, or for increasing or protecting habitat for a particular ecosystem, such as increasing habitat for pollinators. Funding for these programs could come from federal, state, nonprofits, or foundations.

Other Funding Sources

Foundations, nonprofit organizations, and private contributions, including landowners and corporate entities, will be sought for funding of plan implementation activities. Local foundations may fund education, civic engagement, and other local priority efforts. Several conservation organizations have robust programs and conservation efforts in Minnesota, such as The Nature Conservancy, the Audubon Society, and Minnesota Deer Hunters Association. These organizations acquire funding of their own and may have project dollars and technical assistance that can be leveraged. Finally, major cooperators and funding sources are private landowners who typically contribute 25% of project costs and may donate land, services, or equipment for projects or programs.

Collaborative Grants

The Partnership will develop grant applications and seek funding from various governmental and nongovernmental agencies based on the Plan. Individual entities will continue to submit grant applications for their existing programs and activities. However, grants that focus exclusively on implementing the activities of this Plan will be developed and submitted by the parties implementing the Plan.

Potential funding sources for implementing the Plan and the types of activities supported by each source are outlined in *Table 6.3*.

Table 6.3: Potential Funding Sources for Plan Implementation

Source and Organization		Program/Fund Name	Type of Assistance	Form of Assistance	Programs			
					Conservation	Land Management	Monitoring Data Acquisition, and/or Studies	Education and Outreach
State Funding	BWSR	Competitive Clean Water Fund	Financial	Grant	✕	✕	✕	✕
	BWSR	Watershed Based Implementation Funding	Financial	Grant	✕	✕	✕	✕
	BWSR	RIM	Financial	Easement	✕			
	BWSR	NRBG	Financial	Grant		✕	✕	✕
	BWSR	SWCD Local Capacity Service Grants	Financial	Grant	✕	✕	✕	✕
	BWSR	Erosion Control and Management Program	Financial	Grant	✕			
	DNR	Conservation Partners Legacy	Financial	Grant	✕			
	DNR	Aquatic Invasive Species Control	Financial/Technical	Grant				
	DNR	Forest Stewardship Program	Technical	Cost Share	✕			
	DNR	Aquatic Management Area, Wildlife Management Area, Scientific and Natural Area	Financial	Fee Title Acquisition	✕			
	DNR/Revenue	Sustainable Forest Incentive Act	Financial	Tax Incentive	✕			
	MPCA	State Revolving Fund	Financial	Loan	✕			
	MPCA	Surface Water Assessment Grant (SWAG)	Financial	Grant			✕	
	MDH	Source Water Protection Grant	Financial	Grant	✕			
	MDH	Nitrate Testing	Technical	Monitoring			✕	
	MDA	Ag BMP Loan Program	Financial	Loan	✕			
	LSOHC	Outdoor Heritage Funds	Financial	Grant	✕			
	LCCMR	Environmental Trust Fund	Financial	Grant	✕		✕	✕
	Legislature	Bonding	Financial	Bond	✕			

Table 6.3: Potential Grant Funding Sources.

Source and Organization		Program/Fund Name	Type of Assistance	Form of Assistance	Programs			
					Conservation	Land Management	Monitoring Data Acquisition, and/or Studies	Education and Outreach
Federal Funding	FSA	Conservation Reserve Program (CRP)	Financial	Cost Share	✕			
	FSA	Grassland Reserve Program	Financial	Cost Share	✕			
	NRCS	Conservation Innovation Grant	Financial	Grant	✕		✕	✕
	NRCS	EQIP	Financial	Cost Share	✕			
	USGS	Stream Gaging Network	Technical	Monitoring			✕	
	USACE	Planning Assistance	Technical	Planning			✕	
	EPA	State Revolving Fund	Financial	Loan	✕			
Other Funding	Ducks Unlimited		Financial/Technical	Easement/Cost Share	✕			
	Trout Unlimited		Financial/Technical	Easement/Cost Share	✕			
	The Nature Conservancy		Financial	Easement	✕			
	Minnesota Land Trust		Financial	Easement	✕			

07

APPENDICES

A

APPENDIX A: COMMITTEE MEMBERS

A

APPENDIX A: COMMITTEE MEMBERS

Policy Committee Members		
LGU	**Authorized Representative**	
Blue Earth County	Primary	Kevin Paap
	Alternate	Kip Bruender
Blue Earth SWCD	Primary	Chris Hughes
	Alternate	John Shanahan
Faribault County	Primary	Tom Loveall
	Alternate	Bruce Anderson
Faribault SWCD	Primary	Randy Feist
	Alternate	Bill Anderson
Freeborn County	Primary	Ted Herman
	Alternate	
Freeborn SWCD	Primary	Don Kropp
	Alternate	
Waseca County	Primary	De Malterer
	Alternate	Brad Krause
Waseca SWCD	Primary	Larry Muff
	Alternate	Todd Stencel

Steering Team Members	
Organization	**Authorized Representative**
Blue Earth County	Scott Salsbury
Blue Earth SWCD	Jerad Bach
BWSR	Jill Sackett Eberhart
	Shaina Keseley
Faribault County	Brandee Douglas
Faribault SWCD	Nathan Carr
Freeborn County	Rachel Wehner
Freeborn SWCD	Lindsey Zeitler
	Brenda Lageson
Waseca County	Haley Byron
Waseca SWCD	Mark Schaetzke

Affiliation	Name	Title
Required Members		
MN Board of Water and Soil Resources	Jill Sackett-Eberhart	Board Conservationist
	Shaina Keseley	Southern Region Manager
	Julie Westerlund	One Watershed, One Plan Coordinator
MN Department of Agriculture	Scott Matteson	Hydrologist
	Margaret Wagner	Pesticides and Fertilizer Management Section Manager
MN Department of Health	Carrie Raber	Groundwater Restoration and Protection Strategies Coordinator
	Jennifer Ronnenberg	Regional Planner
MN Department of Natural Resources	Dan Girolamo	Area Hydrologist
	Barbara Weisman	Clean Water Operations Consultant
MN Environmental Quality Board	Erik Dahl	Interim Executive Director
MN Pollution Control Agency	Paul Davis	Watershed Project Manager
	Juline Holleran	Watershed Information and Assistance
	Jeff Risberg	Watershed Unit Coordinator
Additional Members		
Natural Resource Conservation Service	Ciara Ahrens	Team Lead
MSU Water Resources Center	Kim Musser	Associate Director
Faribault County	Merissa Lore	Drainage Department
Faribault County	Dustin Anderson	Drainage Department
Citizens	Scott Roemhildt	Conservation Land Owner
	Pat Duncanson	Farmer
	Don and Becky Waskosky	Rural Resident

B

APPENDIX B: OFFICIAL COMMENT LETTERS

B

APPENDIX B: OFFICIAL COMMENT LETTERS

Introduction

Prior to the development of the plan, notification was sent to the plan review authorities to submit formal comment letters on priority issues and plan exceptions. Review authorities were provided 60-days to comment.

Comments were received from the following stakeholders:

- Minnesota Board of Water and Soil Resources (BWSR) on May 24, 2021
- Minnesota Department of Agriculture (MDA) on May 27, 2021
- Minnesota Department of Health (MDH) on May 28, 2021
- Minnesota Department of Natural Resources (DNR) on May 25, 2021
- Minnesota Pollution Control Agency (MPCA) on May 24, 2021
- Faribault County on May 4, 2021
- Faribault Soil and Water Conservation District (SWCD) on May 12, 2021
- Waseca Soil and Water Conservation District (SWCD) [letter not dated]

Check out this information online!
bit.ly/appendixB_LSRW

BOARD OF WATER AND SOIL RESOURCES

11 Civic Center Plaza, Suite 300
Mankato, MN 56001

May 24, 2021

Le Sueur River Watershed Partnership
C/O Haley Byron, Water Resource Specialist
Waseca County
300 North State St.
Waseca, MN, 56093

RE: Notification of Plan Development and Invitation to Submit Priority Issues and Plan Expectations

Dear Le Sueur River Watershed Partnership,

Thank you for the opportunity to provide priority issues and plan expectations for the development of the Le Sueur River Comprehensive Watershed Management Plan under Minnesota Statutes section 103B.801. The Board of Water and Soil Resources (BWSR) has the following overarching expectations for the plan:

Process

The planning process must follow the requirements outlined in the One Watershed, One Plan Operating Procedures (Version 2.0) adopted by the BWSR Board on March 28, 2018. Specifically, the process must:

- Involve a broad range of stakeholders to ensure an integrated approach to watershed management.
- Reassess the agreement established for planning purposes when finalizing the implementation schedule and programs in the plan. It is suggested to do so in consultation with the Minnesota Counties Intergovernmental Trust (MCIT) and/or legal counsel of the participating organizations, to ensure implementation can occur efficiently and with minimized risk. This step is critical if the plan proposes to share services and/or submit joint grant applications.

Plan Content

The plan must meet the requirements outlined in One Watershed, One Plan – Plan Content Requirements (Version 2.1), adopted by the BWSR Board on August 29, 2019. More specifically, the plan must have:

- A thorough analysis of watershed issues, using available science and data, in the selection of priority resource concerns.
- Sufficient measurable goals to indicate an intended pace of progress for addressing the priority issues.
- A targeted and comprehensive implementation schedule, sufficient for meeting the identified goals.
- A thorough description of the programs and activities required to administer, coordinate, and implement the actions in the schedule. This should include work planning (i.e. shared services, collaborative grant-making, decision making as a watershed group) and evaluation.

Bemidji Brainerd Detroit Lakes Duluth Mankato Marshall Rochester St. Cloud St. Paul

St. Paul HQ 520 Lafayette Road North St. Paul, MN 55155 Phone: (651) 296-3767

www.bwsr.state.mn.us TTY: (800) 627-3529 An equal opportunity employer

BWSR has the following specific priority issues:

- **Utilization of existing plans, studies, models, and tools** – The plan must be based on the best available data, models, and other science to meet plan content requirements. The partnership is encouraged to make use of these existing resources and incorporate them into the final plan document by reference, where possible. Below are a few examples of such resources that are available to the partnership. The other State plan review agencies (Department of Agriculture, Department of Health, Department of Natural Resources, and Pollution Control Agency) as well as yourselves and others have done extensive work in this watershed, and that work may not be listed below, but definitely warrants consideration for inclusion as well.
  - **Nonpoint Priority Funding Plan (NPFP)** – The NPFP outlines a criteria-based process to prioritize Clean Water Fund investments. Planning partners intending to pursue Clean Water Fund dollars are strongly encouraged to consider the high-level state priorities, keys to implementation, and criteria for evaluating proposed activities in the NPFP.
  - **WRAPS** – The cycle one Watershed Restoration and Protection Strategies (WRAPS) Report for the Le Sueur River watershed identified altered hydrology (particularly base flow and peak flow), elevated sediment and total suspended solids (TSS) concentrations, elevated nitrogen concentrations, elevated phosphorus concentrations, elevated *E.coli* / Fecal Coliform concentrations, low dissolved oxygen, and poor habitat as the primary pollutant sources and/or stressors. The second cycle of monitoring and assessment is in process and this updated data and information should also be taken into consideration. Implementation actions to address the WRAPS identified stressors should be prioritized in the comprehensive watershed plan. Although much of the assessed surface waters are impaired and a focus will naturally be on restoration practices, some assessed waters meet requirements and should be considered for protection practices.
  - **GRAPS** – The Groundwater Restoration and Protection Strategies (GRAPS) for the Le Sueur River watershed planning area is in development and will be available in the near future. This report will help identify specific groundwater issues in the planning area; therefore, implementation actions to address these issues should be considered in the plan. In addition, BWSR and several other state partners have recently developed the Groundwater/Drinking Water Protection Practices for Agricultural Lands guide. This guide provides information on a range of groundwater protection practices and funding programs to support practice implementation.
  - **Tillage & Erosion Survey Project** – BWSR has been working with the University of Minnesota and other partners on a program to systematically collect data and produce county, watershed, and statewide adoption estimates of conservation measures to address erosion. The Tillage and Erosion Survey Project can provide estimates on tillage trends, cover crop adoption, and land cover for subwatersheds within the plan area. This data can be useful for establishing measurable goals related to these land management practices in the plan.
  - **Daily Erosion Project (DEP)** – The DEP is a web-based application that utilizes the Water Erosion Prediction Project (WEPP) soil erosion model along with radar-derived precipitation data and slope, soil, and land management information to produce daily (storm event) and annual average estimates of soil erosion and runoff at a small watershed scale. This data can enhance water quality modeling efforts and help to provide targeted BMP recommendations.
  - **Local County Water Plans** – Each of the participating partners, as well as those entities that have opted out of participating in plan development, have comprehensive local water management plans (County Water Plans or SWCD Comprehensive Plans). These plans, although many are older, address water problems in the respective counties, are based on principles of sound hydrologic management, and strive for effective environmental protection. The partnership is encouraged to

use these plans as one of the starting points for the development of resource concerns, issue statements, measurable goals, and actions.

- **Climate Adaption and Landscape Resiliency –** BWSR strongly encourages your planning partnership to consider the potential for more extreme weather events and their implications for the water and land resources of the watershed in the analysis and prioritization of issues. The weather record for the Le Sueur River watershed planning area shows increased frequency and severity of extreme weather events, which has a direct effect on local water management. Adjustments involving conservation and fieldwork planning and implementation should be explored; as an example, the use of an updated precipitation frequency chart such as the NOAA Atlas 14 when designing conservation projects. An additional source of information for use in the planning process is the BWSR Climate Resiliency Toolbox. The white paper from the Minnesota Interagency Climate Adaptation Team titled "Building Resiliency to Extreme Precipitation in Minnesota" also provides resiliency strategies related to this topic.
- **Soil Health** – The majority of the land use in the Le Sueur River watershed planning area is agriculture. The concept, and the associated practices, of soil health have the potential to positively change the interaction of agriculture and the natural system at the soil level. Common soil health practices include the use of strip-till / no-till, the use of cover crops, increased areas of continuous living cover, and extended crop rotations. Improving soil health can help decrease soil erosion, increase water infiltration, provide nutrient scavenging, and increase soil organic matter. In addition, at this time, there seems to be increased interest from landowners and operators about soil health. It is recommended that these soil health practices be prioritized for implementation in the plan. Additional information can be found on BWSR's Soils and Soil Health webpage and the Minnesota Office for Soil Health (MOSH) website.
- **Altered Hydrology** – The hydrologic conditions of the subwatersheds in this planning area have changed over time. In recent decades, more precipitation, more runoff, and more runoff per unit of precipitation has been observed. These hydrologic changes in combination with other changes have contributed to instability of natural and artificial watercourses, degradation of wetland habitats, loss of agricultural productivity, and have increased the risk of flood damages. Recognizing altered hydrology as a priority issue in the plan will help ensure that a driving factor behind many related issues is directly addressed.
- **Drainage** – The drainage authorities within the planning boundary should be included as stakeholders in the plan development process. Additionally, the planning partners are strongly encouraged to include projects and activities consistent with multipurpose drainage criteria outlined in Minnesota Statutes §103E.015, Subd. 1 and §103E.011, Subd. 5.
- **Wetlands –** Protection and restoration of wetlands provides benefits for water quality, flood damage reduction, and wildlife habitat. The plan should support the continued implementation of the Wetland Conservation Act and look for opportunities to improve coordination across jurisdictional boundaries. The plan should also identify high priority areas for wetland restoration and strategically target restoration projects to those areas. The Restorable Wetland Prioritization Tool is an example resource that can be used to help identify such areas. Minnesota is embarking on a new wetland prioritization plan that will guide wetland mitigation in the future. Wetland restoration and preservation priorities in this watershed plan may be eligible for inclusion in the prioritization plan in the future.
- **Conservation Easements –** The State's Re-Invest in Minnesota (RIM) Reserve easement program and the Conservation Reserve Enhancement Program (CREP), in partnership with the United States Department of Agriculture (USDA), considers several site specific and landscape scale factors when funding applications. Though it is dependent on specific program terms, the State considers local prioritization of areas for easement enrollment. The plan should consider areas with a higher risk of contributing to surface and subsurface water degradation, such as highly erosive lands and wellhead protection areas, that would benefit from being placed under permanent vegetative cover. Another factor to consider are

the acres of Conservation Reserve Program (CRP) that are scheduled to expire within the watershed. The plan should recognize the potential impact these expiring contracts may have in the planning area and consider prioritizing working with producers regarding the management of those acres.

- **Pollinator Habitat and Vegetative Cover-** In 2019 Governor Walz signed an Executive Order for "Restoring Healthy, Diverse Pollinator Populations that Sustain and Enhance Minnesota's Environment, Economy, and Way of Life". BWSR encourages the partnership to prioritize actions that create areas of vegetative cover that also act as refuge and provide floral resources that can benefit a wide range of pollinators. BWSR has developed a Pollinator Toolbox that provides resources and guidance for project planning, implementation, and management.
- **Urban Stormwater** – Urban stormwater runoff frequently contains pollutants such as pesticides, fertilizers, sediment, salt, and other debris, which can contribute to excess algae growth and poor water clarity/quality in our water resources. Poorly managed urban stormwater can also drastically alter the natural flow and infiltration of water, scour stream banks, and harm or eliminate aquatic organisms and ecosystems. Any cities with Municipal Separate Storm Sewer System (MS4) General Permits should be engaged throughout the planning process to ensure that their Stormwater Pollution Prevention Programs are incorporated into the plan. Smaller municipalities throughout the plan area should also be engaged in the process as they likely have fewer financial and technical resources to address stormwater issues.
- **Local Controls** – Gaps or inconsistencies in local ordinances, policies, or enforcement could affect the success of your plan's implementation. Subsurface Sewage Treatment Systems (SSTS) compliance inspection requirements (property transfer, variance, etc.), level 3 feedlot inventories, drainage processes and proceedings, and shoreland regulations are some examples that should be explored during plan development.

BWSR commends the partners for their participation in the planning effort. We look forward to working with you through the rest of the plan development process. If you have any questions, please feel free to contact BWSR Board Conservationist Jill Sackett Eberhart [jill.sackett.eberhart@state.mn.us ~ (c) 507-380-1680 ~ (o) 507-344-2825].

Sincerely,

Jill Sackett Eberhart

Jill Sackett Eberhart
BWSR Board Conservationist

cc: Ed Lenz, BWSR Southern Region Manager (via email)
Julie Westerlund, One Watershed, One Plan Coordinator (via email)
Shaina Keseley, BWSR Clean Water Specialist (via email)
Robb Collett, Southern Regional Manager – Ecological and Water Resources Division (via email)
Barbara Weisman, Clean Water Operations Consultant (via email)
Dan Girolamo, DNR Area Hydrologist (via email)
Margaret Wagner, Pesticides and Fertilizer Management Section Manager (via email)
Scott Matteson, MDA Hydrologist (via email)
Carrie Raber, Groundwater Restoration and Protection Strategies Coordinator (via email)

Jennifer Ronnenberg, MDH Regional Planner (via email)
Jeff Risberg, Watershed Information and Assistance (via email)
Juline Holleran, Watershed Information and Assistance (via email)
Paul Davis, MPCA Watershed Project Manager (via email)

Equal Opportunity Employer

DEPARTMENT OF NATURAL RESOURCES

South Region Headquarters
21371 State Hwy 15
New Ulm, MN 56073

May 25, 2021

Haley Byron,
300 North State Street
Waseca, MN 56093

Dear Ms. Byron,

Thank you for inviting the Minnesota Department of Natural Resources (DNR) to provide input to the Comprehensive Watershed Management Plan for the Le Sueur Watershed. I am writing on behalf of DNR Commissioner Sarah Strommen to share DNR priorities.

DNR Divisions collaborated to identify priorities and perspectives we believe are important to be included in your plan. A plan centered on these priorities will help sustain water resources in ways that enhance the quality of life for all who live, work, and enjoy the outdoors in this watershed.

The DNR can supply scientific data and information related to the attached priorities. We also offer tools and services that can help get to know the trends and data of the watershed and explore water resource values. We are committed to provide on-going support for the Le Sueur Comprehensive Watershed Plan.

Our point of contact is Dan Girolamo, (Daniel.girolamo@state.mn.us, 507-822-1559). As our Area Hydrologist covering the Le Sueur River Watershed, Dan can answer questions or provide more information about the attached priorities and the technical support we can provide.

Please feel free to contact me directly, if you like. As the DNR's Regional Director, I am committed to ensuring that DNR staff in the region are organized to support 1W1P planning efforts and the resulting plans. We greatly value the opportunity to contribute to the process and believe our watersheds are critical to our communities- from agriculture to investment in infrastructure.

Sincerely,

Scott W. Roemhildt
South Region Director
Minnesota Department of Natural Resources

cc: Dan Girolamo, DNR Area Hydrologist, Rob Collett, DNR Regional Manager, Barbara Weisman, DNR Clean Water Operations Consultant, Jill Sackett-Eberhart, BWSR Board Conservationist, Paul Davis MPCA Environmental Specialist 4, Scott Matteson, MDA Hydrologist 2, Jennifer Ronnenberg, MDH Planner Principal State.

DNR Priorities for the Le Sueur Watershed

The priorities below were identified in consultation with an interdisciplinary team of DNR natural resource management specialists from multiple DNR Divisions who work in this watershed. The priorities are grouped around several high-level issues that comprehensive watershed management plans are expected to consider:

High-Level Issue	Priority Resource Concerns & Opportunities
Surface Water Quality and Quantity	**Hydrologic Conditions – Altered Hydrology** The impacts of altered hydrology in this watershed are significant. Since 1990, stream channel-forming flows have almost doubled. Flooding in recent years has severely impacted the communities of St Clair, New Richland, and rural areas near Mankato. Frequent high flows and cumulative flow volume are impacting homes, roads, private property, and recreational opportunities. Changing land use and climate—such as shifts in cropping, unmitigated drainage improvements, new impervious surfaces, and higher rainfall volume and duration—have increased the volume of surface water in the Le Sueur River watershed. ***Strategies to Consider:*** • Promote resilience through adaptive land use strategies to adjust to extreme rainfall impacts. • Promote two-stage ditches with a built-in floodplain to improve water quality, minimize cleanouts, and reduce bank failures. • Promote adaptive floodplain and floodway hydrology/vegetative corridors along the Cobb River corridor upstream of Minnesota Lake. • Size culvert and bridge replacements to minimize flooding, convey floodwaters, maintain flows, and allow for fish and sediment passage. Replace old bridges with new bridges and convert some culverts to bridges. Public water corridors to consider for this work include the Big Cobb River, the Maple River, Rice Creek, and the Little Le Sueur River. **See DNR resources on "floodplain friendly" infrastructure design at road-waterway crossings**." **Channel Erosion and Stability** The Le Sueur River and many of its tributaries are impaired for sediment primarily from stream channels, banks, and bluffs. Rivers and streams in the watershed have more occurrences of high flows and low flows, along with changes in seasonality, and increased cumulative annual flows. ***Strategies to Consider***: • Mitigate for lost permanent and temporary water storage in the watershed using wetland restoration and cover crops for added storage in the upper watersheds of public drainage project area. • The MPCA Le Sueur WRAPS Report prioritizes stream restoration projects for specific impairments and critical infrastructure needs. The Rice Creek sub-watershed is barely impaired for sediment and is a good candidate for stream channel restoration and riparian connectivity projects. The DNR has an intensive study underway in this subwatershed to identify the most likely to succeed restoration sites.
	Upland Erosion Encourage practices that minimize excessive runoff and erosion. ***Strategies to Consider:*** • Consider using resources like the NRCS Soil Health fact sheet series to encourage landowners to plant cover crops to store water, protect tilled soils from erosion, and increase evapotranspiration in early spring. Use native species for permanent cover scenarios. • Organize early coordination for drainage improvement projects to incorporate multi-purpose drainage practices. This would include the project engineer(s), drainage authorities, SWCD, and applicable state conservation agencies and DNR. • Identify steep row cropped fields using LiDAR-based terrain analysis and the Stream Power Index (SPI) to target outreach for practices that reduce surface runoff erosion. • Promote programs that add perennial vegetation to the landscape, including RIM, CREP, CRP, Wetland Banking, and Walk-In Access. Promote native species within these programs and other permanent cover scenarios.
Habitat and Outdoor Recreation	**Land Use Impacting Terrestrial and Aquatic Habitat** Utilize land use tools, such as a zoning codes and ordinances, to address new challenges that negatively impact our ecosystems and confine surface water hydrology. ***Strategies to Consider:*** • Continue to manage infestations of documented invasive species including Emerald Ash Bore, Eurasian Water Milfoil, Invasive Phragmites, and Wild Parsnip • Maintaining forested, prairie and aquatic areas by informing citizens groups about invasive terrestrial and invasive species management. • Maintain or add riparian connectivity corridors as natural, resilient plant communities along the Cobb River and Rice Creek floodplain. • Connect wildlife, habitats, and native biodiversity to increase landscape resiliency, as described in the Minnesota Wildlife Action Plan. • Protect and restore lake and lake shore habitat for fish and wildlife in St. Olaf, Rice, Elysian, Lura, Bass, Madison, Freeborn, and Buffalo Lakes. These lakes have some existing high quality that could be expanded with restoration actions. The DNR has several reference resources to help LGU's protect lakes, lake watersheds and lakeshore. • Protect in-lake and surrounding lake-watershed habitat for 27 Natural Environment Lakes and 8 public water wetlands in the watershed. • Use new DNR resources to protect lakes and public water wetlands in the watershed. Innovative Shoreland Standards Showcase.

High-Level Issue	Priority Resource Concerns & Opportunities
	Increasing Demand for Outdoor Recreation Opportunities Take steps to meet current and emerging needs for outdoor recreation in the watershed, to attract tourism and enhance the quality of life for those who live here. ***Strategies to Consider:*** • Work with citizen groups such as the Mankato Paddling Club and the Isaak Walton League to identify and develop potential new carry-in water access sites for canoes and kayaks. • Consider working with DNR Parks and Trails to identify potential new state water trails. • DNR can help identify suitable areas for increase access for shoreline fishing. • Support public resources that promote biking, hiking, fishing, and boating.
Groundwater Supply and Quality	**Groundwater supply and quality** Groundwater is the primary source of water for rural residents, farms, livestock facilities, and communities throughout the watershed. Fresh water supplies allow us to maintain our current standard of living. Groundwater is important not only for overall water supply but also for maintaining rare wetland and spring features on the landscape. ***Strategies to Consider:*** • Promote groundwater conservation using the water supply plans in the cities of New Richland, Waseca, and Eagle Lake. DNR would be happy to work with the local 1W1P to expand educational programs. • Consider working with DNR to install additional ground water observation wells on public lands.to monitor aquifers used as the primary water source for agricultural industries, rural residents, and the communities. • Protect groundwater upwelling and spring resources to protect the unique habitats and supply surface water resources during dry periods. Focus on the many springs located near the Le Sueur River in northern Blue Earth County are discharging groundwater from unconsolidated glacial materials and shallow bedrock aquifers. • Map springs in the watershed with assistance DNR Hydrogeology staff. Protect known springs from impacts associated with development.

FARIBAULT COUNTY
SOIL & WATER CONSERVATION DISTRICT

Blue Earth Ag Center | 415 South Grove Street, Suite 8
Blue Earth, Minnesota 56013 | www.faribaultcountyswcd.com
Phone (507) 526-2388 | Fax (507) 526-2508

Date: May 12, 2021

To: Haley Byron, Waseca County & Jill Sackett Eberhart, BWSR

RE: Faribault County SWCD priority issues and plan expectations

Thank you for providing the opportunity to submit water management issues that Faribault County SWCD feels the Le Sueur River One Watershed One Plan process and resulting plan should address.

The Le Sueur River Watershed in Faribault County consists of over 156,500 acres. The watershed is predominately agricultural with 85% of land in crop production, and 63% of land falling within the benefited area of a public drainage system.

Faribault County SWCD encourages review of the 2018-2027 Faribault County Local Water Management Plan in the Le Sueur River One Watershed One Plan process. The Implementation Program can be found on page 29. Because the watershed is dominated by agriculture, Faribault County SWCD would like to highlight the following high priority issues from the county water plan.

Goal 1. Address impacts of altered hydrology and drainage changes (pg 30).

- Implement Multipurpose Drainage Management (MDM) practices to mitigate existing impacts from altered hydrology in agricultural areas (Actions listed on pg 30).
- Prevent additional impacts of altered hydrology through existing controls and better planning of drainage activities (Actions listed pg 31).

Public drainage systems are funded by benefited landowners and administered by public drainage authorities (County Commissioners), in accordance with state drainage law. Adequate drainage is a critical component to a successful farming operation. However, a key issue will be how we look at drainage into the future. Multipurpose drainage systems can provide both private drainage benefits and public water management benefits.

According to Minnesota Statute 103E.015, drainage authorities are required to consider certain environmental, land use, and multipurpose water management criteria before establishing a drainage project. The Drainage Authority must consider alternative measures, including those identified in state approved locally adopted water plans. Adequate external sources of funding are critical to establishing multipurpose drainage practices as each system is an entity unto itself and the benefited landowners are assessed 100% of costs.

A statutory change to Minnesota Statute 103E.011 allows drainage authorities to utilize outside sources of funding (instead of or in addition to assessments on benefited properties) for wetland

preservation or restoration, creation of water quality improvements, or flood control. Utilizing outside funding sources, partnerships, and building upon goals identified in the One Watershed One Plan, local initiatives can continue to grow into the future to achieve multipurpose drainage management goals.

Goal 2. Address water quality through soil health and BMP strategies (pg 33).

- Implement management practices to conserve and manage soil health; and reduce, trap, and treat nutrients and sediment (Actions listed pgs 33-34).
- Implement structural practices to reduce, trap, and treat nutrients and sediment (Actions listed pg 34).

Improving water quality in agricultural watersheds requires a variety of tools and there are many practice options available. These include both management practices (nonstructural) and structural best management practices. It will take many land and water best management practices combined to improve water quality, ranging from soil management to large scale water storage. They are most effective when combined in sequence, as a treatment train.

The first of these practices, proper management of soil, is one of the most effective ways for farmers to increase productivity and profitability while improving the environment. These practices offer the clearest opportunity to maintain crop production, and cost effectively protect the long-term productive capability of the soil resource base of the county into the future.

Faribault County SWCD would also like to identify the Bass lake and Rice Creek watershed as a priority as the SWCD has been accepted into a long term 319 MPCA grant for that watershed.

We look forward to working with you through the rest of the plan development process.

Sincerely,

Jeff Bell

Jeff Bell
Chairman
Faribault County SWCD Board of Supervisors

cc: Nathan Carr, SWCD (via email)
Brandee Douglas, GIS Dept (via email)
Merissa Lore, Drainage Dept (via email)

AgBMP Loans · Buffer Law · Cost Share · Easements · Local Water Management Plan · Stormwater · Trees · Wetland Conservation Act
AN EQUAL OPPORTUNITY EMPLOYER

FARIBAULT COUNTY/MN

Faribault County

BOARD OF COMMISSIONERS
415 North Main Street, P.O. Box 130
Blue Earth Minnesota 56013-0130
Telephone: (507) 526-6228
Website: www.co.faribault.mn.us

JOHN ROPER
1ST DISTRICT
GREG YOUNG
2ND DISTRICT
BILL GROSKREUTZ, JR.
3RD DISTRICT
TOM LOVEALL
4TH DISTRICT
BRUCE ANDERSON
5TH DISTRICT

Date: May 4, 2021

To: Haley Byron, Waseca County & Jill Sackett Eberhart, BWSR

RE: Faribault County priority issues and plan expectations

Thank you for providing the opportunity to submit water management issues Faribault County feels the Le Sueur River One Watershed One Plan process and resulting plan should address.

The Le Sueur River Watershed in Faribault County consists of over 156,500 acres. The watershed is predominately agricultural with 85% of land in crop production, and 63% of land falling within the benefited area of a public drainage system.

Faribault County encourages review of the 2018-2027 Faribault County Local Water Management Plan in the Le Sueur River One Watershed One Plan process. The Implementation Program can be found on page 29. Because the watershed is dominated by agriculture aided by artificial drainage, Faribault County would like to highlight the following high priority issues from the county water plan.

Goal 1. Address impacts of altered hydrology and drainage changes (pg 30).

- Implement Multipurpose Drainage Management (MDM) practices to mitigate existing impacts from altered hydrology in agricultural areas (Actions listed on pg 30).
- Prevent additional impacts of altered hydrology through existing controls and better planning of drainage activities (Actions listed pg 31).

Drainage authority and drainage staff input is strongly encouraged throughout the plan update process, as well as including projects and activities consistent with multipurpose drainage criteria.

Public drainage systems are funded by benefited landowners and administered by public drainage authorities (County Commissioners), in accordance with state drainage law. Adequate drainage is a critical component to a successful farming operation. However, a key issue will be how we look at drainage into the future. Multipurpose drainage systems can provide both private drainage benefits and public water management benefits.

According to Minnesota Statute 103E.015, drainage authorities are required to consider certain environmental, land use, and multipurpose water management criteria before establishing a drainage project. The Drainage Authority must consider alternative measures, including those identified in state approved locally adopted water plans. Adequate external sources of funding are critical to establishing multipurpose drainage practices as each system is an entity unto itself and the benefited landowners are assessed 100% of costs.

A statutory change to Minnesota Statute 103E.011 allows drainage authorities to utilize outside sources of funding (instead of or in addition to assessments on benefited properties) for wetland preservation or restoration, creation of water quality improvements, or flood control. Utilizing outside funding sources, partnerships, and building upon goals identified in the One Watershed

Faribault County does not discriminate on the basis of race, color, national origin, sex, sexual orientation, religion, age and handicapped status in employment or the provision of services.

FARIBAULT COUNTY/MN

Faribault County

BOARD OF COMMISSIONERS
415 North Main Street, P.O. Box 130
Blue Earth Minnesota 56013-0130
Telephone: (507) 526-6228
Website: www.co.faribault.mn.us

JOHN ROPER
1ST DISTRICT
GREG YOUNG
2ND DISTRICT
BILL GROSKREUTZ, JR.
3RD DISTRICT
TOM LOVEALL
4TH DISTRICT
BRUCE ANDERSON
5TH DISTRICT

One Plan, local initiatives can continue to grow into the future to achieve multipurpose drainage management goals.

Goal 2. Address water quality through soil health and BMP strategies (pg 33).

- Implement management practices to conserve and manage soil health; and reduce, trap, and treat nutrients and sediment (Actions listed pgs 33-34).
- Implement structural practices to reduce, trap, and treat nutrients and sediment (Actions listed pg 34).

Improving water quality in agricultural watersheds requires a variety of tools and there are many practice options available. These include both management practices (nonstructural) and structural best management practices. It will take many land and water best management practices combined to improve water quality, ranging from soil management to large scale water storage. They are most effective when combined in sequence, as a treatment train.

The first of these practices, proper management of soil, is one of the most effective ways for farmers to increase productivity and profitability while improving the environment. These practices offer the clearest opportunity to maintain crop production, and cost effectively protect the long-term productive capability of the soil resource base of the county into the future.

While agricultural sources are a high priority, Faribault County would also like to identify lake watershed strategies to restore and protect basins within the Le Sueur River Watershed.

We look forward to working with you through the rest of the plan development process.

Sincerely,

John Roper
Chairman
Faribault County Board of Commissioners

cc: Brandee Douglas, GIS Dept (via email)
Merissa Lore, Drainage Dept (via email)
Nathan Carr, SWCD (via email)

Faribault County does not discriminate on the basis of race, color, national origin, sex, sexual orientation, religion, age and handicapped status in employment or the provision of services.

Le Sueur River Watershed

One Watershed One Plan

Blue Earth County–Waseca County–Steele County–Freeborn County-Faribault County-Le Sueur County

Minnesota Department of Agriculture
Nitrogen and Pesticide Use

The Minnesota Department of Agriculture surveys farmers through the National Agricultural Statistics Service. The most recent nitrogen use survey was for the 2014 crop year and the most recent pesticide use survey was for the 2015 and 2016 crop years.

The following nitrogen use information is from the 2014 nitrogen use report, specifically the Irrigated and non-irrigated sandy soils, Northwestern, Southwestern and West Central BMP region.

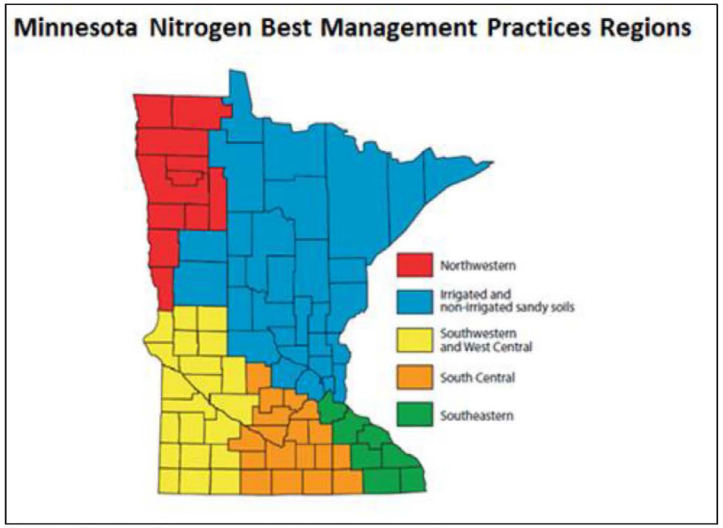


Figure 1. Minnesota Nitrogen Best Management Practices Regions

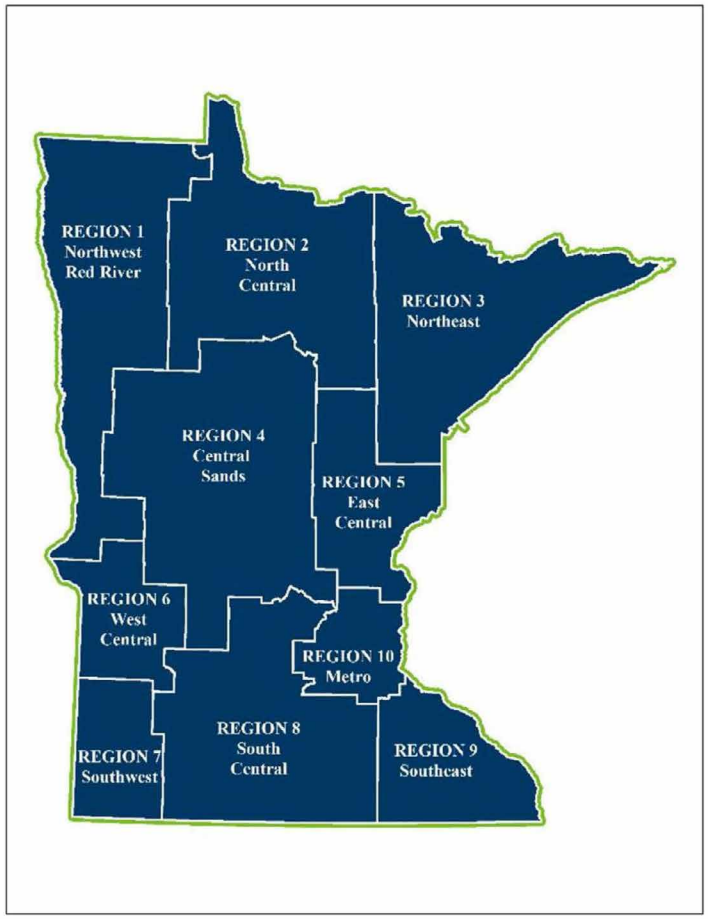


Figure 2. Minnesota Pesticide Best Management Practices Regions

Nitrogen use in the Le Sueur River Watershed: 2014 Crop Year

More than five responses are required for any individual category to be reported. Regional data may not represent county data due to the low number of farmers represented from these counties.

Fertilizer section

Figure 3 details the distribution of nitrogen fertilizer rates in the SC BMP region for corn following soybeans; the corresponding corn yields are detailed in red.

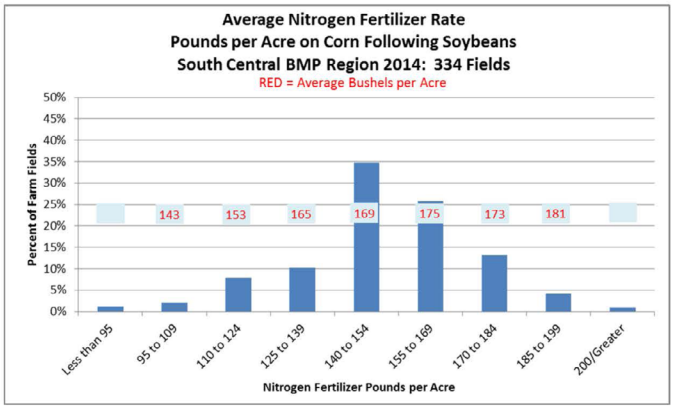


Figure 3. Average nitrogen fertilizer rates and yields on corn following soybeans in the SC BMP region for 2014: 334 fields.

In the SC BMP region, nitrogen fertilizer rates ranged from an average of 150 pounds per acre in Blue Earth County to 159 pounds per acre in Waseca County as shown in Table 1.

Table 1. Average county nitrogen fertilizer rates and corn yields for the SC BMP region for corn following soybeans.

County	Number of Farm Fields	Average Nitrogen Rate Pounds per Acre	Average Corn Yield Bushels per Acre
Blue Earth	31	150	172
Faribault	18	154	179
Freeborn	30	155	173
Le Sueur	14	149	157
Steele	16	158	178
Waseca	11	159	170

Figure 4 details the distribution of nitrogen fertilizer rates in the SC BMP region for corn following corn; the corresponding corn yields are detailed in red.

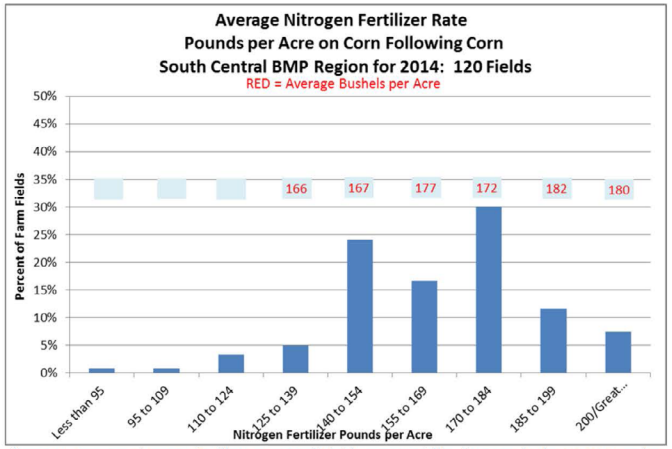


Figure 4. Average nitrogen fertilizer rates and yields on corn following corn in the SC BMP region for 2014: 120 fields.

In the SC BMP region, nitrogen fertilizer rates ranged from an average of 159 pounds per acre in Faribault County to 177 pounds per acre in Steele County as shown in Table 2.

Table 2. Average county nitrogen fertilizer rates and corn yields for the SC BMP region for corn following corn.

County	Number of Farm Fields	Average Nitrogen Rate Pounds per Acre	Average Corn Yield Bushels per Acre
Blue Earth	14	167	176
Faribault	11	159	171
Freeborn	12	167	174
Le Sueur	5	171	157
Steele	5	177	177
Waseca	**	**	**

** Less than five responses

Figure 5 details the distribution of nitrogen fertilizer rates in the SC BMP region for corn following corn following alfalfa; the corresponding corn yields are detailed in red.

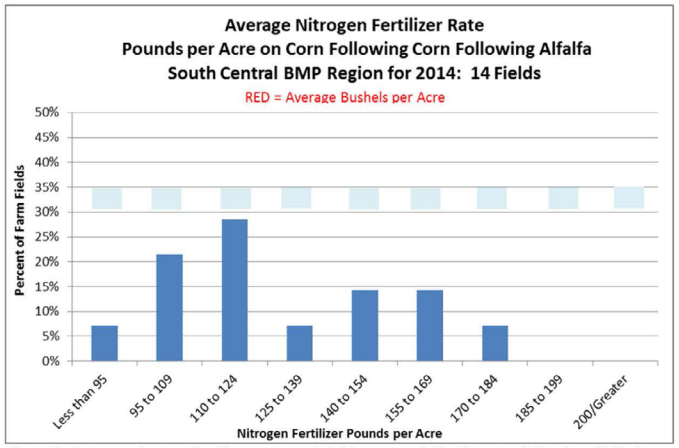


Figure 5. Average nitrogen fertilizer rates and yields on corn following corn following alfalfa in the SC BMP region for 2014: 14 fields.

No counties had five or more responses in SC BMP region.

South Central BMP Region: Corn Following Alfalfa

There were less than five fields that were included in the SC BMP region for corn following alfalfa analysis.

Figure 6 details the distribution of nitrogen fertilizer rates in the SC BMP region for corn following small grains; the corresponding corn yields are detailed in red.

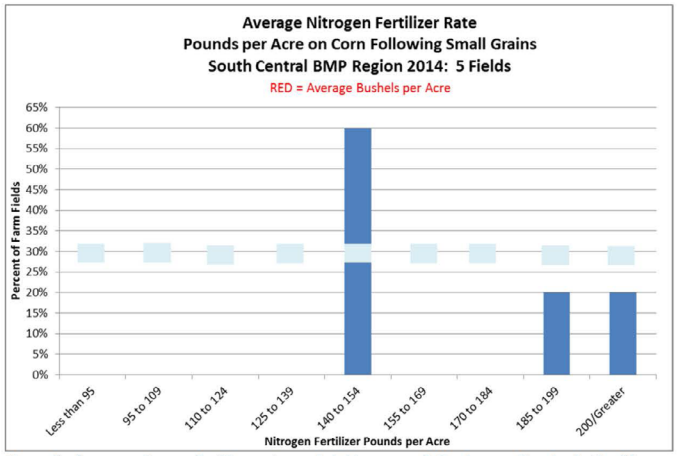


Figure 6. Average nitrogen fertilizer rates and yields on corn following small grains in the SC BMP region for 2014: 5 fields.

No counties had five or more responses in the SC BMP region.

Figure 7 details the distribution of nitrogen fertilizer rates in the SC BMP region for corn following other crops; the corresponding corn yields are detailed in red.

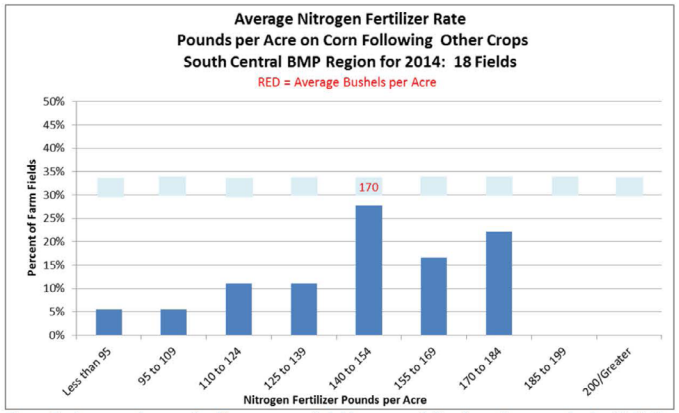


Figure 7. Average nitrogen fertilizer rates and yields on corn following other crops in the SC BMP region for 2014: 5 fields.

No counties had five or more responses in the SC BMP region.

Manure section

Table 3 details the percentage of respondents on if the farmer knew the amount of nitrogen that is in the manure applied for the 2014 corn crop.

Table 3. The farmers' knowledge of nitrogen content of manure being applied for the 2014 corn crop.

BMP Region	Knowledge of the Actual Amount of Nitrogen Applied	Percentage of Respondents
South Central	Yes	38
South Central	No	62

§ Percent was calculated using only those respondents who answered yes or no to the question.

Table 4 details the nitrogen rates and corn yields in South Central BMP region on corn following various crops. These are corn fields applied with manure and commercial nitrogen fertilizer.

Table 4. Average amount of nitrogen applied from manure and commercial nitrogen fertilizer and corresponding corn yields to previous crops by BMP region.

BMP Region	Previous Crop	Average Nitrogen Rate from Manure and Commercial Fertilizer Pounds per Acre	Average Corn Yield Bushels per Acre
South Central	Soybeans	167	178
South Central	Corn	176	179
South Central	Corn/Alfalfa	**	**
South Central	Small Grains	**	**
South Central	Other	**	**

Table 5 details the total amount of nitrogen applied to fields from both manure and commercial nitrogen.

Table 5. Average amount of nitrogen applied to fields from both commercial fertilizer and manure.

BMP Region	Main Source of Manure	Average Nitrogen Rate from Manure and Commercial Fertilizer Pounds per Acre
South Central	All	188
South Central	Dairy	178
South Central	Beef	185
South Central	Hog	**
South Central	Poultry	208
South Central	Other	180

Pesticide Section

Table 6. Pesticide applications and rates for corn – PMR 8

Agricultural Chemical (a.i.)	Surveyed Area Applied *Percent*	Average Applications *Number*	Average Rate Per Application *Pounds per Acre* (a.i.)	Average Rate Per Crop Year *Pounds per Acre* (a.i.)	Total Applied Per Crop Year *Total Pounds* (a.i.)[1]
Herbicides					
Acetochlor	54	1.0	1.07	1.10	103,791
Atrazine	12	1.0	0.52	0.53	10,951
Clopyralid	39	1.0	0.07	0.08	5,214
Dicamba	7	1.0	0.14	0.14	1,867
Diflufenzopyr	4	1.0	0.04	0.04	326
Dimethenamid-p	9	1.0	0.53	0.53	8,155
Flumetsulam	39	1.0	0.03	0.03	2,069
Glufosinate-ammonium	1	1.0	0.51	0.51	1,207
Glyphosate	81	1.1	0.97	1.08	153,870
Mesotrione	35	1.0	0.09	0.09	5,561
S-Metolachlor	24	1.1	0.97	1.12	47,682
Saflufenacil	8	1.0	0.06	0.06	819
Tembotrione	12	1.0	0.07	0.07	1,546
Topramezone	2	1.0	0.02	0.02	61
Triencarbazone-methyl	1	1.0	0.01	0.01	34
Insecticides					
Bifenthrin	11	1.0	0.07	0.07	1,338
Chlorpyrifos	1	1.0	0.36	0.36	423
Cyfluthrin	1	1.0	0.01	0.01	10
Lambda-cyhalothrin	1	1.0	0.02	0.02	34
Tebupirimphos	1	1.0	0.12	0.12	191
Tefluthrin	2	1.0	0.09	0.09	359
Fungicides					
Azoxystrobin	6	1.0	0.08	0.08	821
Propiconazole	6	1.0	0.07	0.07	776
Pyraclostrobin	4	1.0	0.11	0.11	818
Trifloxystrobin	1	1.0	0.09	0.09	158

Data in this column is calculated from "raw" data and represents the total pounds of active ingredient applied to the indicated crop(s) in 2015 by survey participants in this area. Data in this table and the selection of survey participants was not statistically "weighted" in any fashion. Thus, inappropriate extrapolation of the data may over- or under-estimate the total pounds of a.i. used at the state, area or sub-area levels.

Herbicides applied but not published included the following: 2,4-D, Bromoxynil, Cloransulam, Flumioxazin, Fluthiacet-Methyl, Pendimethalin, Primisulfuron, Rimsulfuron, and Sulfentrazone.

Insecticides applied but not published included the following: Chlorethoxyfos, Gamma-cyhalothrin, Permethrin, and Thiamethoxam.
Fungicides applied but not published included the following: Cyproconazole, Fluoxastrobin, Fluxapyroxad, Metconazole, and Picoxystrobin.

Table 7. Pesticide applications and rates for soybeans – PMR 8

Agricultural Chemical (a.i.)	Surveyed Area Applied *Percent*	Average Applications *Number*	Average Rate Per Application *Pounds per Acre* (a.i.)	Average Rate Per Crop Year *Pounds per Acre* (a.i.)	Total Applied Per Crop Year *Total Pounds* (a.i.)[1]
Herbicides					
Acetochlor	4	1.0	1.07	1.07	6,064
Chlorimuron	2	1.0	0.01	0.01	14
Clethodim	5	1.0	0.06	0.06	417
Cloransulam	29	1.0	0.02	0.02	869
Dimethenamid-p	6	1.0	0.27	0.27	2,391
Fluazifop	4	1.0	0.10	0.10	517
Flumioxazin	9	1.0	0.07	0.07	887
Fluthiacet-methyl	1	1.3	0.00	0.00	5
Fomesafen	41	1.0	0.20	0.20	11,107
Glufosinate-ammonium	5	1.5	0.42	0.61	4,352
Glyphosate	84	1.2	0.92	1.17	134,921
Imazethapyr	9	1.0	0.05	0.05	528
Lactofen	1	1.0	0.13	0.13	174
Metolachlor	1	1.0	1.06	1.06	1,578
Metribuzin	8	1.0	0.20	0.20	2,312
Pendimethalin	1	1.0	0.88	0.88	692
Pyroxasulfone	3	1.0	0.09	0.09	408
S-metolachlor	8	1.0	1.06	1.06	11,510
Saflufenacil	7	1.0	0.03	0.03	247
Sulfentrazone	34	1.0	0.17	0.17	8,191
Thifensulfuron	3	1.0	0.01	0.01	49
Trifluralin	1	1.0	0.71	0.71	999
Insecticides					
Beta-cyfluthrin	1	1.0	0.02	0.02	35
Bifenthrin	11	1.0	0.08	0.08	1,192
Chlorpyrifos	14	1.0	0.42	0.42	8,021
Esfenvalerate	2	1.0	0.04	0.04	97
Imidacloprid	1	1.0	0.04	0.04	70
Lambda-cyhalothrin	17	1.0	0.02	0.02	508

Agricultural Chemical (a.i.)	Surveyed Area Applied *Percent*	Average Applications *Number*	Average Rate Per Application *Pounds per Acre* (a.i.)	Average Rate Per Crop Year *Pounds per Acre* (a.i.)	Total Applied Per Crop Year *Total Pounds* (a.i.)[1]
Thiamethoxam	4	1.0	0.03	0.03	183
Fungicides					
Azoxystrobin	4	1.0	0.09	0.09	435
Fluxapyroxad	9	1.0	0.06	0.06	717
Propiconazole	5	1.0	0.05	0.05	349
Pyraclostrobin	15	1.0	0.12	0.12	2,388
Tetraconazole	6	1.0	0.07	0.07	556
Trifloxystrobin	3	1.0	0.08	0.08	329

Data in this column is calculated from "raw" data and represents the total pounds of active ingredient applied to the indicated crop(s) in 2016 by survey participants in this area. Data in this table and the selection of survey participants was not statistically "weighted" in any fashion. Thus, inappropriate extrapolation of the data may over- or under-estimate the total pounds of a.i. used at the state, area or sub-area levels.

Herbicides applied but not published included the following: 2,4-D, Acifluorfen, Fenoxaprop, Flumiclorac, Imazamox, and Quizalofop.

Insecticides applied but not published included the following: Gamma-cyhalothrin and Zeta-cypermethrin.

Fungicides applied but not published included the following: Cyproconazole, Fluoxastrobin, Flutriafol, Prothioconazole, and Tebuconazole.

Table 8. Pesticide applications and rates for wheat – PMR 8

Agricultural Chemical (a.i.)	Surveyed Area Applied *Percent*	Average Applications *Number*	Average Rate Per Application *Pounds per Acre* (a.i.)	Average Rate Per Crop Year *Pounds per Acre* (a.i.)	Total Applied Per Crop Year *Total Pounds* (a.i.)[1]
Herbicides					
Fluroxypyr	55	1.0	0.08	0.08	37
MCPA	49	1.0	0.35	0.35	144
Fungicides					
Pyraclostrobin	26	1.0	0.07	0.07	16

[1]Data in this column is calculated from "raw" data and represents the total pounds of active ingredient applied to the indicated crop(s) in 2016 by survey participants in this area. Data in this table and the selection of survey participants was not statistically "weighted" in any fashion. Thus, inappropriate extrapolation of the data may over- or under-estimate the total pounds of a.i. used at the state, PMR, or sub-PMR levels.

Herbicides applied but not published included the following: 2,4-D, Bromoxynil, Clopyralid, Fenoxaprop, Glyphosate, Pyrasulfotole, Triencarbazone-methyl.

Insecticides applied but not published included the following: Lambda-cyhalothrin.

Fungicides applied but not published included the following: Azoxystrobin, Propiconazole, and Trifloxystrobin.

Table 9. Pesticide applications and rates for hay – PMR 8

Agricultural Chemical (a.i.)	Surveyed Area Applied *Percent*	Average Applications *Number*	Average Rate Per Application *Pounds per Acre* (a.i.)	Average Rate Per Crop Year *Pounds per Acre* (a.i.)	Total Applied Per Crop Year *Total Pounds* (a.i.)[1]
Insecticides					
Chlorpyrifos	7	1.0	0.47	0.47	307
Lambda-cyhalothrin	3	1.2	0.02	0.03	7

[1]Data in this column is calculated from "raw" data and represents the total pounds of active ingredient applied to the indicated crop(s) in 2016 by survey participants in this area. Data in this table and the selection of survey participants was not statistically "weighted" in any fashion. Thus, inappropriate extrapolation of the data may over- or under-estimate the total pounds of a.i. used at the state, PMR, or sub-PMR levels.

Herbicides applied but not published included the following: 2,4-D, Clethodim, and Imazethapyr.

Insecticides applied but not published included the following: Cyfluthrin and Permethrin.

Fungicides applied but not published included the following: Azoxystrobin.

DEPARTMENT OF AGRICULTURE

May 27, 2021

Waseca County
c/o Haley Byron, Water Resource Specialist
300 North State Street
Waseca, MN 56093

Dear Ms. Byron,

Thank you for the opportunity to provide priority issues for consideration in the development of the Le Sueur One Watershed One Plan (1W1P). The Minnesota Department of Agriculture (MDA) looks forward to working with local government units, stakeholders, and other agency partners in the planning process, as well as to help provide technical information to appropriate landowners and agricultural organizations in the watershed.

One of the MDA's roles, related to the 1W1P process, is technical assistance. The MDA maintains a variety of water quality programs including research, on-farm demonstrations, and groundwater and surface water monitoring. Our goal is to provide you with data from the programs to help understand the resource concerns and further engage the agricultural community in local problem solving, and to identify potential areas of collaboration as you discuss priority areas in the plan.

MDA Priority Concerns

Nitrate and pesticides in surface and groundwater are the priority resource concerns for the MDA statewide. Priority concerns specific to the Le Sueur River watershed relate to nitrate and pesticides in surface water. According to the Minnesota Pollution Control Agency (MPCA), Pollutant Load Monitoring Network program, the Le Sueur Watershed is the highest nitrate-nitrogen yielding major watershed of the 51 monitored in Minnesota. In addition, Beauford Ditch (located 10 miles south of Mankato) is currently listed as impaired for the insecticide chlorpyrifos (2018).

The MDA is interested in working with local and state partners to engage the agricultural community, support on-farm demonstrations, promote the Minnesota Ag Water Quality Certification Program, and use the most recent and relevant research and tools to share information about conservation practices.

Pesticide Water Quality Monitoring

Annual Report: www.mda.state.mn.us/monitoring
MDA's ambient surface and groundwater water quality data is available at the National Water Quality Monitoring Council: https://www.waterqualitydata.us/

The MDA has been conducting pesticide monitoring in groundwater since 1985, and in surface waters since 1991. Annually, the MDA completes approximately 250 sample collection events from groundwater and 800 sample collection events from rivers, streams, and lakes across the state. In general, the MDA collects water samples from agricultural and urban areas of Minnesota and analyzes water for up to approximately 150 different pesticide compounds that are widely used and/or pose the greatest risk to water resources. Groundwater monitoring is conducted by the MDA and MPCA staff. Surface water monitoring is conducted by the MDA and local organizations. All monitoring is completed following annual work plans and standard operating procedures (SOPs) developed by the MDA.

The purpose of the MDA's pesticide monitoring program is to determine the presence and concentration of pesticides in Minnesota waters, and present long-term trend analysis. Trend analysis requires a long-term investment in monitoring within the MDA's established networks. The monitoring information is used to inform the management of pesticides in Minnesota. The MDA will continue to conduct statewide pesticide monitoring and will provide additional information related to the occurrence of pesticides in Minnesota waters.

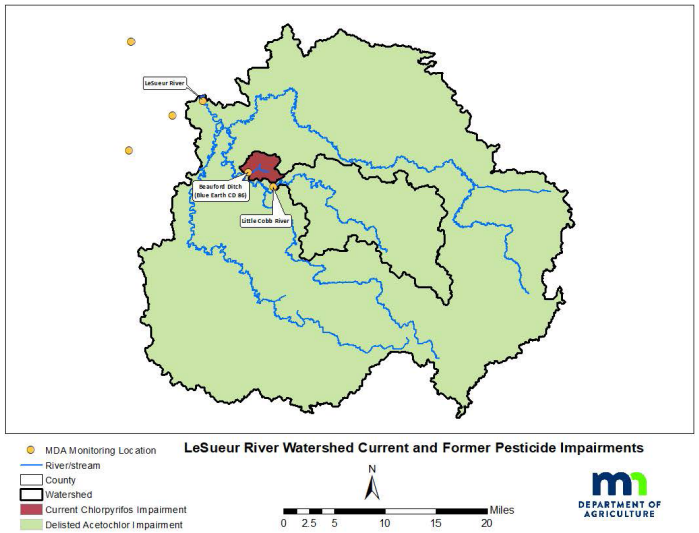
Surface water data related to the Le Sueur River Watershed

The MDA has completed **1,065** pesticide and/or nutrient water quality sample collection events from **14 river/stream** locations, **eight** pesticide water quality sample collection events from **two lake** locations and **101** pesticide and/or nutrient water quality sample collection events from **one rainfall monitoring station** in the watershed from 1999-2020.

The Le Sueur River and Beauford Ditch were designated as impaired by the herbicide acetochlor in 2008 and were removed from the Impaired Waters List in 2014. More recently, Beauford Ditch was designated as impaired by the insecticide chlorpyrifos in 2018 based on a detection that occurred in 2015. The MDA has continued to monitor Beauford Ditch and no detections have occurred since 2015. The MDA has developed and implemented a Chlorpyrifos Response Plan that details specific actions the MDA is taking related to chlorpyrifos detections in surface water including Best Management Practices (BMPs), outreach and education, as well as targeted regulatory inspections. The MDA plans to continue to monitor pesticides in the Le Sueur River and Beauford Ditch. Figure 1 shows the location of the current and former pesticide impairments, as well as monitoring station locations. Specific water quality BMPs for chlorpyrifos are available at: https://www.mda.state.mn.us/sites/default/files/inline-files/chlorpyrifosbmps%281%29.pdf

625 ROBERT STREET NORTH, SAINT PAUL, MN 55155-2538 · 651-201-6000 or 1-800-967-2474 · WWW.MDA.STATE.MN.US
In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651-201-6000. TTY users can call the Minnesota Relay Service at 711. The MDA is an equal opportunity employer and provider.

Figure 1. Le Sueur Watershed Pesticide Impairments and Monitoring Locations



Groundwater data related to the Le Sueur River Watershed

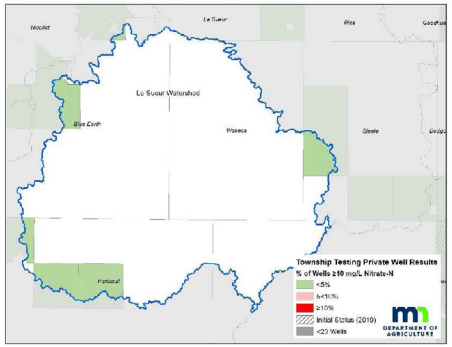
Nitrogen Fertilizer Management Plan (NFMP)
http://www.mda.state.mn.us/nfmp
The NFMP is the state's blueprint for preventing or minimizing the impacts of nitrogen fertilizer on groundwater. The original plan was developed in 1990 and updated in March 2015. One activity stemming from the 2015 NFMP is implementation of the Groundwater Protection Rule, which (among other things) identifies vulnerable area where fall nitrogen fertilizer application is restricted. There is limited area in the Le Sueur watershed where fall restrictions apply. See: Fall Nitrogen Fertilizer Application Restrictions (2021) (arcgis.com)

Township Testing Program - Private Well Nitrate Testing
www.mda.state.mn.us/townshiptesting

The MDA has identified townships throughout the state that are vulnerable to groundwater contamination and have significant row crop production. Blue Earth, Steel and Faribault counties participated in the TTP. Each selected township was offered testing in two steps, the 'initial' sampling and the 'follow-up' sampling. In the initial sampling, all township homeowners using private wells received a nitrate test kit. If the initial sample detected nitrate at any level, the homeowner was offered follow-up tests for nitrate and pesticides and a well site visit. Trained MDA staff visited willing homeowners to resample the well and then conducted a site assessment. The site assessment identified possible non-fertilizer sources of nitrate and assessed the condition of the well. A well with construction problems may be more susceptible to contamination.

Two datasets, 'Initial' and 'Final', are used to evaluate nitrate in the private wells in this program. The initial dataset represents private wells drinking water regardless of the potential source of nitrate. The final dataset was informed through an assessment process to evaluate each well. In the assessment, wells that had nitrate results over 5 mg/L were removed from the final dataset if a potential non-fertilizer source or well problem was identified, there was insufficient information on the construction or condition of the well, or for other reasons which are outlined in the full report. The final dataset represents wells with nitrate attributed to the use of commercial fertilizer. Blue Earth, Steele, and Faribault counties have been through both initial testing and follow-up testing. In Figure 2, the map shows the 'Final' results as the nitrate range did not change from the 'Initial' for any of the townships in the watershed. All townships tested in the watershed had <5% of their wells over or at 10 mg/L. Detailed sampling results are available at Township Testing Program (TTP).

Figure 2. MDA township testing location and final results in the Le Sueur River Watershed.

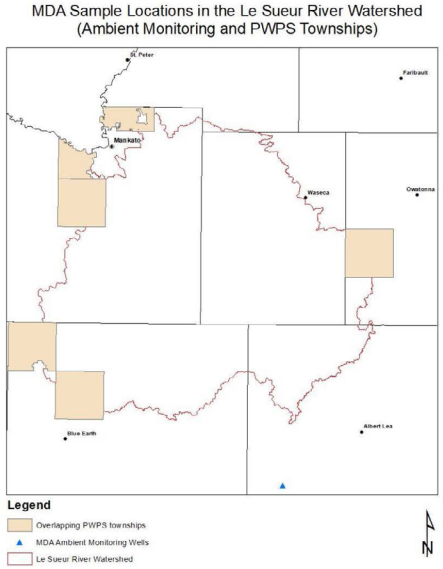


Private Well Pesticide Sampling (PWPS)
www.mda.state.mn.us/pwps

The MDA began evaluating pesticide presence and magnitude in private residential drinking water wells as part of the Private Well Pesticide Sampling (PWPS) Project in 2014. This is a companion program to the MDA Township Testing Program (TTP). The townships included in the PWPS depend on the voluntary participation of well owners and may not reflect all townships sampled in the TTP.

- As part of the PWPS Project, wells in six townships in Blue Earth, Steele and Faribault counties were sampled in 2019 (Figure 3). The chemistry data is available for the wells; however, due to privacy rules, the well locations cannot be shared.
- Seventeen pesticides or pesticide degradates were detected in wells in these townships. None of the wells had a concentration that exceeded an established human health reference value for the compounds.

Figure 3. MDA PWPS Townships in the Le Sueur River Watershed.



Other MDA activities of potential interest to the Le Sueur River Watershed

Edge-of-field data

Minnesota Discovery Farms
https://discoveryfarmsmn.org/

Discovery Farms Minnesota (DFM) is a farmer-led effort to gather field scale water quality information from different types of farming systems in landscapes across Minnesota. The mission of the Discovery Farms program is to gather water quality information under real-world conditions. The goal is to provide practical, credible, site-specific information to enable better farm management.

The program is designed to collect accurate measurements of sediment, nitrogen, and phosphorus movement over the soil surface and through subsurface drainage tiles. This work leads to a better understanding of the relationship between agricultural management and water quality. From 2011 to 2017, one farm in Blue Earth County near Good Thunder, MN was monitored as part of the DFM program for both surface runoff and subsurface tile drainage from a corn-soybean rotation. There are currently no Discovery Farms sites in the Le Sueur watershed. MDA can provide results for this Good Thunder site, or others, if requested.

Additional Resources and Opportunities for BMP funding and Cost-Share

Since there is a significant portion of the watershed in agricultural production, we would like to bring to your attention a few programs and resources that we encourage you to reference during the planning process.

Minnesota Agricultural Water Quality Certification Program (MAWQCP)
www.mda.state.mn.us/awqcp.

The MAWQCP is a voluntary opportunity for farmers and agricultural landowners to take the lead in implementing conservation practices that protect water quality. Participants that implement and maintain approved farm management practices will be certified and in turn obtain regulatory certainty for a period of ten years. This planning program should be included in the 1W1P because it is an opportunity for agricultural producers to evaluate nutrient and field management practices within the watershed.

There are currently 21 certified farmers, farming 142 fields with a total of 13,555 acres in the watershed. New conservation projects that have been undertaken include:

- 52 tile intakes treated
- 1,991 acres of cover crops
- 1.6 acres critical area plantings/pollinator plantings

625 ROBERT STREET NORTH, SAINT PAUL, MN 55155-2538 · 651-201-6000 or 1-800-967-2474 · WWW.MDA.STATE.MN.US
In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651-201-6000. TTY users can call the Minnesota Relay Service at 711. The MDA is an equal opportunity employer and provider.

- 20,900 feet of fence
- 2.64 acres of field border
- 12.22 acres of filter strips
- 1 grade stabilization structure
- 6,385 feet of grassed waterways
- 5,075 acres changed their nitrogen and phosphorus application timing and rate to reduce water quality risks
- 16 acres of prescribed grazing
- 1 waste storage facility
- 1 water and sediment control basin
- 477 acres of reduced or no-till

Pollution reduction calculations on the cover crops, field borders, filter strips, grade stabilization, grassed waterways, tillage and basins resulted in an estimated reduction of 796 tons of sediment and 819 pounds of phosphorus delivered to surface waterways on an annual basis.

Nitrogen and Pesticide Use Surveys

The MDA surveys farmers through the National Agricultural Statistics Service (NASS). A summary of the survey data is attached. The most recent nitrogen use survey was for the 2014 crop year, specifically the Irrigated and Non-Irrigated sandy soils, Northwestern, Southwestern and West Central BMP regions. The most recent pesticide use survey was from the 2015/2016 crop years. MDA can provide more detail on this if requested.

For reference, the University of Minnesota fertilizer recommendations are found here:
https://extension.umn.edu/nutrient-management/crop-specific-needs

Ag BMP Handbook

The **Agricultural BMP Handbook for Minnesota** is a comprehensive inventory of agricultural best management practices that address water quality impairments. The handbook is available on-line and hard copies are available upon request. State agencies and local government partners have found this a useful resource in the WRAPS and 1W1P processes.

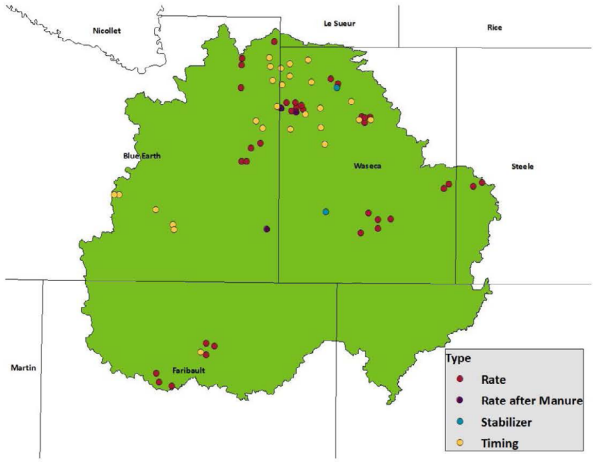
Webpage:
http://www.mda.state.mn.us/protecting/cleanwaterfund/research/handbookupdate

- Download at: https://wrl.mnpals.net/islandora/object/WRLrepository:2955

Nutrient Management Initiative (NMI)
www.mda.state.mn.us/nmi

The NMI assists crop advisers and farmers in evaluating nutrient management practices on their own fields using on-farm trials. This is a great opportunity to promote new strategies that are available that could improve fertilizer use efficiency and help open the door to include local cooperators in the water quality discussion. In addition, advanced trials working with University of Minnesota researchers help to guide current nitrogen rate recommendations.
Since 2015, there have been 66 on-farm trials completed in the watershed. The locations of the trials are shown in Figure 4. Crop advisers worked directly with their farmers to evaluate nitrogen rate, nitrogen rate after manure, application timing, and stabilizer products by setting up trials on their own fields. New ideas in other watersheds included on-farm cover crop, placement, tillage, as well as precision agriculture and technology-based trials.

Figure 4. Nutrient Management Initiative sites in the Le Sueur River Watershed.



The AgBMP Loan Program
www.mda.state.mn.us/agbmploans

The AgBMP Loan Program is a water quality program that provides low interest loans to farmers, rural landowners, and agriculture supply businesses. The purpose is to encourage agricultural best management practices that prevent or reduce runoff from feedlots, farm fields, and other pollution problems identified by the county in local water plans.

625 ROBERT STREET NORTH, SAINT PAUL, MN 55155-2538 · 651-201-6000 or 1-800-967-2474 · WWW.MDA.STATE.MN.US
In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651-201-6000. TTY users can call the Minnesota Relay Service at 711. The MDA is an equal opportunity employer and provider.

Agricultural Land Preservation Program
The MDA assists local government in protection of farmland through its Agricultural Land Preservation Program. This includes online tools and programmatic support. More information is available at https://www.mda.state.mn.us/environment-sustainability/farmland-protection

Agricultural Growth, Research, and Innovation (AGRI) Program
The AGRI program has funding that may be helpful in water quality protection. Specifically:

- The AGRI **Livestock Investment Grant** encourages long-term industry development for Minnesota livestock farmers and ranchers by helping them improve, update, and modernize their livestock operation infrastructure and equipment. More information is available at www.mda.state.mn.us/livestockinvestment.

- The AGRI **Sustainable Agriculture Demonstration Grant** supports innovative on-farm research and demonstrations. It funds projects that explore sustainable agriculture practices and systems that could make farming more profitable, resource efficient, and personally satisfying. Findings are published in the MDA's annual *Greenbook*. More information is available at www.mda.state.mn.us/sustagdemogrant.

Thank you again for the opportunity to provide background and relevant information as we look forward to being involved in the 1W1P process.

Sincerely,

Scott Matteson

Scott Matteson
Hydrologist
Minnesota Department of Agriculture
507-344-3201
Scott.matteson@state.mn.us

cc: Jill Sackett Eberhart, BWSR, Board Conservationist
Shaina Keseley, BWSR, Clean Water Specialist
Ed Lenz, BWSR, Southern Region Manager
Julie Westerlund, BWSR, One Watershed, One Plan Coordinator
Jennifer Ronnenberg, MDH, Regional Planner
Carrie Raber, MDH, Groundwater Restoration and Protection Strategies Coordinator
Dan Girolamo, DNR, Area Hydrologist
Robb Collett, DNR, Southern Regional Manager, Ecological and Water Resources Division
Barbara Weisman, DNR, Clean Water Operations Consultant
Juline Holleran, MPCA Watershed Information and Assistance
Jeff Risberg, MPCA, Watershed Unit Coordinator
Paul Davis, MPCA, Environmental Specialist
Margaret Wagner, MDA, Pesticides and Fertilizer Management Section Manager

DEPARTMENT OF HEALTH

Protecting, Maintaining and Improving the Health of All Minnesotans

May 28, 2021

Haley Byron
Water Resource Specialist
Waseca County
300 North State. Street
Waseca, MN 56093

Jill Sackett Eberhart
Board Conservationist
Board of Water and Soil Resources
11 Civic Center Plaza, Suite 300
Mankato, MN 56001

Dear Haley and Jill:

Subject: Initial Comment Letter – Le Sueur River 1W1P

Thank you for the opportunity to submit comments regarding water management issues for consideration in the One Watershed One Plan (1W1P) for the Le Sueur River Watershed Planning Area. Our agency looks forward to working closely with the local government units, stakeholders, and other agency partners on this watershed planning initiative.

The Minnesota Department of Health's (MDH) mission is to protect, maintain, and improve the health of all Minnesotans. An important aspect to protecting citizens health is the protection of drinking water sources. MDH is the agency responsible for implementing programs under the federal Safe Drinking Water Act (SDWA).

Source Water Protection (SWP) is the framework MDH uses to protect drinking water sources. The broad goal of SWP in Minnesota is to protect and prevent contamination of public and private sources of groundwater and surface water sources of drinking water using best management practices and local planning. Core MDH programs relevant to watershed planning are the State Well Code (MR 4725), Wellhead Protection (MR 4720) and surface water / intake protection planning resulting in a strong focus in groundwater management and protecting drinking water sources.

One of the three high level state priorities in Minnesota's Nonpoint Priority Funding Plan is to "Restore and protect water resources for public use and public health, including drinking water" which aligns with our agency's mission and recommendations to your planning process.

MDH Priority Concerns:

Prioritize Drinking Water Supply Management Areas (DWSMA) in the Le Sueur River 1W1P

DWSMA boundaries establish a protection area through an extensive evaluation that determines the contribution area of a public water supply well, aquifer vulnerability and provide an opportunity to prioritize specific geographic areas for drinking water protection purposes. DWSMA boundaries that extend beyond city jurisdictional limits or are established in Wellhead Protection (WHP) Action Plans for nonmunicipal public water supplies, like mobile home parks, can be a special focus for local partners prioritizing drinking water protection activities.

Aquifer vulnerability determines the level of management required to protect a drinking water supply and provides an opportunity to target implementation practices in accordance with the level of risk different land uses pose. The attached Public Water Supply Summary Spreadsheet highlights the primary drinking water protection activities for many DWSMAs in the watershed.

Prioritize Sealing Abandoned Wells

Unused, unsealed wells can provide a conduit for contaminants from the land surface to reach the sources of drinking water. This activity is particularly important for abandoned wells that penetrate a confining layer above a source aquifer.

Sealing wells is a central practice in protecting groundwater quality, however when resource dollars are limited it is important to evaluate private well density to identify the populations most at risk from a contaminated aquifer.

Prioritize Protection of Private Wells

Many residents of Le Sueur River Watershed rely on a private well for the water they drink. However, no public entity is responsible for water testing or management of a private well after drilling is completed. Local governments are best equipped to assist private landowners through land use management and ordinance development, which can have the greatest impact on protecting private wells. Other suggested activities to protect private wells include: hosting well testing or screening clinics, providing water testing kits, working with landowners to better manage nutrient loss, promoting household hazardous waste collection, managing storm water runoff, managing septic systems, and providing best practices information to private well owners.

Prioritize Protecting Noncommunity Public Water Systems

Noncommunity public water systems provide drinking water to people at their places of work or play (schools, offices, campgrounds, etc.). Land use and management activities (maintaining/upgrading SSTS, well sealing, etc.) should consider effects on these public water systems. Le Sueur watershed has six of these systems, currently of unknown vulnerability. Many of these systems have aging wells that will eventually need to be replaced.

Find information regarding noncommunity public water systems in the watershed in reports titled Source Water Assessments (SWA) at:
https://www.health.state.mn.us/communities/environment/water/swp/swa.html

Source Water Assessments provide a concise description of the water source used by a public water system and discuss how susceptible that source may be to contamination.

Prioritize areas were public and private drinking water wells are impacted by arsenic.

On January 22, 2001, EPA adopted a new standard for arsenic in drinking water of 0.01 mg/l or 10 parts per billion (ppb), replacing the old standard of 50 ppb. Water systems had to meet the new standard by January 23, 2006. As of August 2008, well contractors in Minnesota test each newly drilled well for arsenic and share the results with the well owner and MDH.

Many areas throughout the watershed are prone to high groundwater arsenic values. Prioritize these protection areas by working with landowners on expanding arsenic testing to understand long-term concentrations, work with well contractors and MDH staff on well construction methods that are shown to reduce arsenic in new wells, improved education and outreach, and if possible, resources for water treatment if needed.

Support the implementation of comprehensive source water protection plans for the public water supply system using surface water in the watershed.

Surface water based drinking water systems are highly susceptible to potential contamination. Recognizing those surface water bodies that are sources of drinking water in the watershed is very important.

Approximately 70% of Mankato's drinking water is supplied by two shallow Ranney wells that draw water from the Minnesota and Blue Earth Rivers. Source water to these wells is considered to be groundwater under the direct influence of surface water, filtered through the riverbed sediments with a very short time-of-travel. The Le Sueur River feeds into the Blue Earth River just southwest of Mankato and may influence the city well associated with it. Nitrate concentrations in Mankato Ranney Wells has reached levels of concern. Portions of the spill management area (SPA) and the emergency response area (ERA) for the city of Mankato are within the Le Sueur River Watershed. Local partners may consider focusing nitrogen BMPs in the Le Sueur Watershed due to the mutual benefits of protecting drinking water supplies.

Targeting Groundwater & Drinking Water Activities in the 1W1P Planning Process

Limitation of Existing Tools –

Watershed models used for prioritizing and targeting implementation scenarios in the 1W1P, whether PTMapp, HSPF-Scenario Application Manager (SAM) or others, leverage GIS information and/or digital terrain analysis to determine where concentrated flow reaches surface water features. While this is an effective approach for targeting surface water contaminates, it does not transfer to groundwater concerns because it only accounts for the movement of water on the land's surface. Unfortunately, targeting tools are not currently available to model the impact on groundwater resources. The Minnesota Department of Health suggests using methodologies applied by the agency to prioritize and target implementation activities in the Source Water Protection program.

Using the Groundwater Restoration and Protection Strategies (GRAPS) Report –

The MDH, along with its state agency partners, are developing a Groundwater Restoration and Protection Strategies (GRAPS) report for the Le Sueur River 1W1P. GRAPS will provide information and strategies on groundwater and drinking water supplies to help inform the local decision making process of the 1W1P. Information in a GRAPS Report can be used to identify risks to drinking water from different land uses. Knowing the risks to drinking water in a specific area allows targeting of specific activities.

- Prioritize Actions Identified in the Groundwater Restoration and Protection Strategies (GRAPS) report.

Using Wellhead Protection Plans –

- Identify Drinking Water Supply Management Areas (DWSMA) located in the watershed.
- Examine the vulnerability of the aquifer to contamination risk to determine the level of management required to protect groundwater quality. For example, a highly vulnerable setting requires many different types of land uses to be managed, whereas a low vulnerability setting focuses on a few land uses due to the long recharge time and protective geologic layer.
- Use the Management Strategies Table in a Wellhead Protection Plan to identify and prioritize action items for each DWSMA

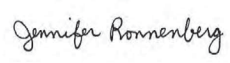
Using Guidance Documents to Manage Specific Potential Contaminant Sources –

The MDH has developed several guidance documents to manage impacts to drinking water from specific potential contaminant sources. Topics include mining, stormwater, septic systems, feedlots, nitrates, and chemical and fuel storage tanks. This information is available at

https://www.health.state.mn.us/communities/environment/water/swp/resources.html

Attached you will find a listing of MDH data and information to help you in the planning process. Thank you for the opportunity to be involved in your watershed planning process. If you have any questions, please feel free to contact me at (507) 517-4118 or jennifer.ronnenberg@state.mn.us.

Sincerely,



Jennifer Ronnenberg, Principal Planner
Minnesota Department of Health
Source Water Protection Unit
18 Woodlake Dr. SE
Rochester, MN 55904

Attachments

CC: Mark Wettlaufer, MDH Source Water Protection Unit
Bob Tipping, MDH Source Water Protection Unit
Carrie Raber, MDH Source Water Protection Unit
Dereck Richter, MDH Source Water Protection Unit
Tracy Lund, MDH Source Water Protection Unit
Chris Elvrum, MDH Well Management Section
Jill Sackett Eberhart, BWSR Board Conservationist
Shaina Keseley, BWSR Clean Water Specialist
Daniel Girolamo, DNR Area Hydrologist
Paul Davis, MPCA Watershed Project Manager
Scott Matteson, MDA Hydrologist

MDH Data and information:

- A spreadsheet of the public water supply systems in the watershed, status in wellhead protection planning, and any drinking water protection concerns or issues that have been identified in protection areas. This information can help you understand the drinking water protection issues in the watershed, prioritize areas for implementation activities, and identify potential multiple benefits for implementation activities.

- Shape files of the Drinking Water Supply Management Areas (DWSMA) in the watershed are located at https://www.health.state.mn.us/communities/environment/water/swp/maps/index.htm.

MDH Figures:

- A figure detailing the "Pollution Sensitivity of Near-Surface Materials" in the Le Sueur River Watershed. This information can help you understand the ease with which recharge and contaminants from the ground surface may be transmitted into the upper most aquifer on a watershed scale. Individual wellhead protection areas provide this same information on a localized scale. This is turn can be used to prioritize areas and implementation activities.

- A figure detailing "Pollution Sensitivity of Wells" in the Le Sueur River Watershed. This information can help you understand which wells in the watershed are most geologically sensitive based on the vulnerability of the aquifer in which the well is completed. This information allows for targeting of implementation activities to the sources of water people are drinking.

- A figure detailing "Nitrate Results" in the Le Sueur River Watershed. This shows sampling results of known wells to highlight areas where there is nitrate contamination of the water people are drinking. This represents one data source for nitrate results, seek other sources for a more comprehensive understanding. This figure can help prioritize implementation activities aimed at reducing nitrate levels in the sources of drinking water.

- A figure detailing "Arsenic Results" in the Le Sueur River Watershed. This information can help you understand which wells in the watershed contain elevated arsenic levels.

- A figure detailing "DWSMA Vulnerability" in the Le Sueur River Watershed. This information can help you understand which DWSMA is most vulnerable to contamination from the ground surface. This figure allows for targeting of implementation activities for public water systems.

- A figure showing the extent of the Mankato Drinking Water Supply Management Area (DWSMA) that extends into the Le Sueur watershed and the number of acres per HUC 12.

LeSueur 1W1P Area Public Water Systems -
Drinking Water Protection Concerns for Water Quality and Quantity

Aquifer Risk	Name	County	Watershed (HUC 8)	Subwatershed (HUC 12)	Type of System	WHP Plan	DWSMA Vulnerability	Drinking Water Protection Concerns
Very high potential contaminant risk - due to lack of geologic protection to groundwater and connection to surface water								
Focus on impacts from land use practices and surface water runoff								
	Mankato	Blue Earth	Le Sueur	Portions of: Lower LeSueur Cobb River Maple River	Municipal	In progress	Surface water sourced DWSMA	Detections of metolachlor and atrazine in 2019, herbicides and gasoline compounds prior to 2009. Nitrate max of 6.3 mg/L with historic exceedances of 10 mg/L. Portions of the spill management area and emergency response area in Le Sueur watershed.
Moderate potential contaminant risk - due to well costruction or leaky geologic protection from surface water influence								
Focus on potential land use contaminant sources that may impact water quality								
	Madison Lake	Blue Earth	Le Sueur	Madison Lake	Municipal	Complete	Moderate	Uncertain pathways of surface water to the aquifers. Reduce potential contaminants, such as stormwater infiltration from treated roads and seal unused wells. A monitoring plan developed with MDH is recommended to assess influence of the lake.
Low potential contaminant risk - due to good well construction and/or good geologic protection from surface water influence								
Focus on sealing of unused wells and old public water supply wells (funding available from MDH)								
	Eagle Lake	Blue Earth	Le Sueur	Eagle Lake	Municipal	Complete	Very low	
	Good Thunder	Blue Earth	Le Sueur	City Vernon Center	Municipal	Complete	Very low	
	Amboy	Blue Earth	Le Sueur	JD 49	Municipal	Complete	Very low	
	Mapleton	Blue Earth	Le Sueur	Cottonwood Lake	Municipal	Complete	Low	
	Pemberton	Blue Earth	Le Sueur	Little Cobb River	Municipal	In progress	Low	
	St. Clair	Blue Earth	Le Sueur	City St. Clair	Municipal	In progress	Low	
	Terrace View East Condo Assoication	Blue Earth	Le Sueur	Le Sueur River	Non-municipal	Complete	Low	
	Rapidan Development Company Inc	Blue Earth	Le Sueur	Le Sueur River	Non-municipal	Complete	Low	
	Minnesota Lake	Faribault	Le Sueur	JD 51 - Cobb R	Municipal	Complete	Low	
	Wells	Faribault	Le Sueur	Maple River	Municipal	Complete	Very low	
	Easton	Faribault	Le Sueur	Upper CD 3	Municipal	Complete	Low	
	Delavan	Faribault	Le Sueur	Lower Rice Creek	Municipal	Complete	Very low	
	Hartland	Freeborn	Le Sueur	Boot Creek	Municipal	Not started	NA	
	Janesville	Waseca	Le Sueur	Buffalo Lake	Municipal	Complete	Low	seal unused municipal well, private wells
	Waseca	Waseca	Le Sueur	Cty Ditch 38	Municipal	Complete	Low	
	Waldorf	Waseca	Le Sueur	Severson Lake	Municipal	Complete	Low	old railroad and creamery wells may need sealing
	New Richland	Waseca	Le Sueur	CD 27	Municipal	Complete	Low	old municipal wells need sealing, general issues with drainage ditch in town causing back-up concerns

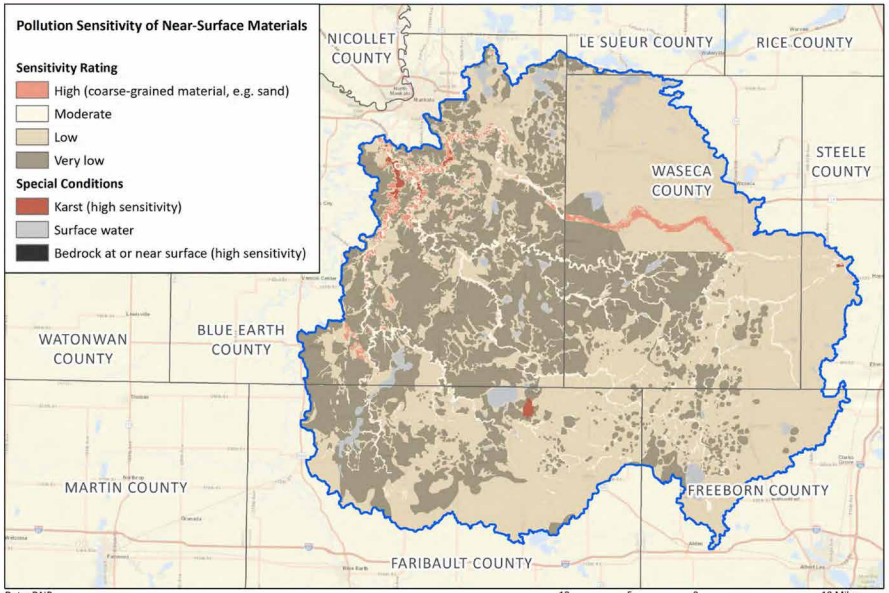
Summary of Community, Municipal Public Water Systems
17 total: 2 vulnerable, 15 non-vulnerable
Summary of Community, Non-municipal Public Water Systems
2 total: 2 non-vulnerable
Summary of Non-Community, Non-Transient Public Water Systems
6 total: unknown vulnerabilities

Acronyms:
SWCA=Surface Water Contribution Area
DWSMA=Drinking Water Supply Management Area
WHP=Wellhead Protection Plan

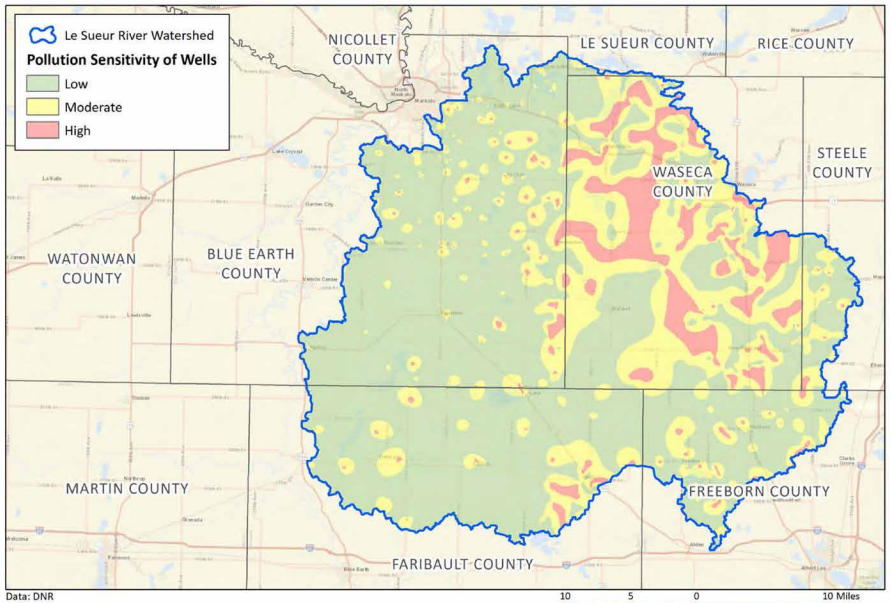
Le Sueur 1W1P Area Public Water Systems - Non-Community, Non-Transient
Drinking Water Protection Concerns for Water Quality and Quantity

Name	County	Watershed	Subwatershed	Type of System	WHP Plan	DWSMA Vulnerability	Drinking Water Protection Concerns
MN Elevator Inc./Vertitrion Midwest, Inc.	Blue Earth	Le Sueur	Lower Le Sueur	Non-com, non-transient	not started	unknown	Well is over 30 years old, should start planning for
Corteva Agriscience	Blue Earth	Le Sueur	Lower Le Sueur	Non-com, non-transient	not started	unknown	Well is over 30 years old, should start planning for well replacement
Syngenta Seeds, Inc.	Blue Earth	Le Sueur	Maple River	Non-com, non-transient	not started	unknown	Well is over 30 years old, should start planning for well replacement
KEI	Blue Earth	Le Sueur	City of Mankato	Non-com, non-transient	not started	unknown	Well is over 30 years old, should start planning for well replacement
Guardian	Waseca	Le Sueur	Lower Le Sueur	Non-com, non-transient	not started	unknown	
Crystal Valley Cooperative	Waseca	Le Sueur	Upper Le Sueur	Non-com, non-transient	not started	unknown	

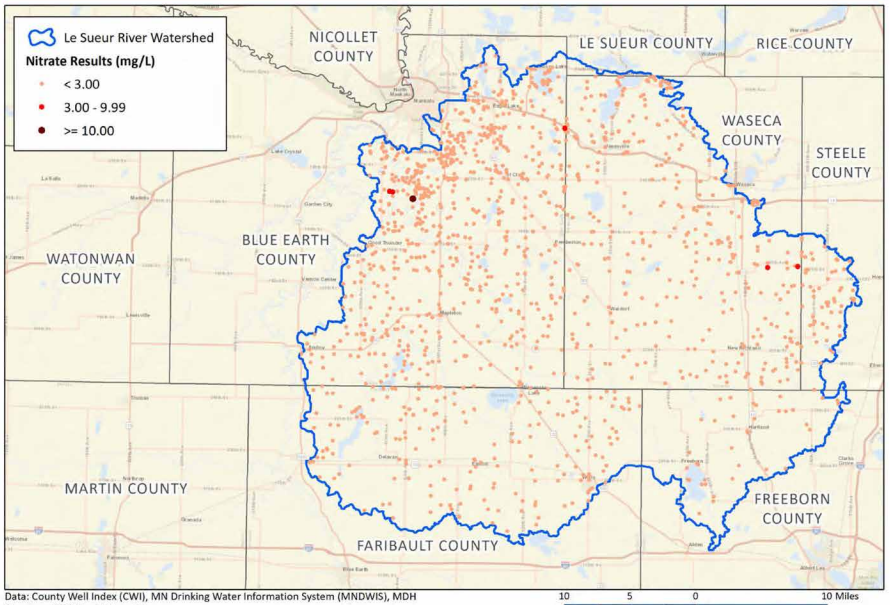
Overall: No known water quality or quantity issues at this time



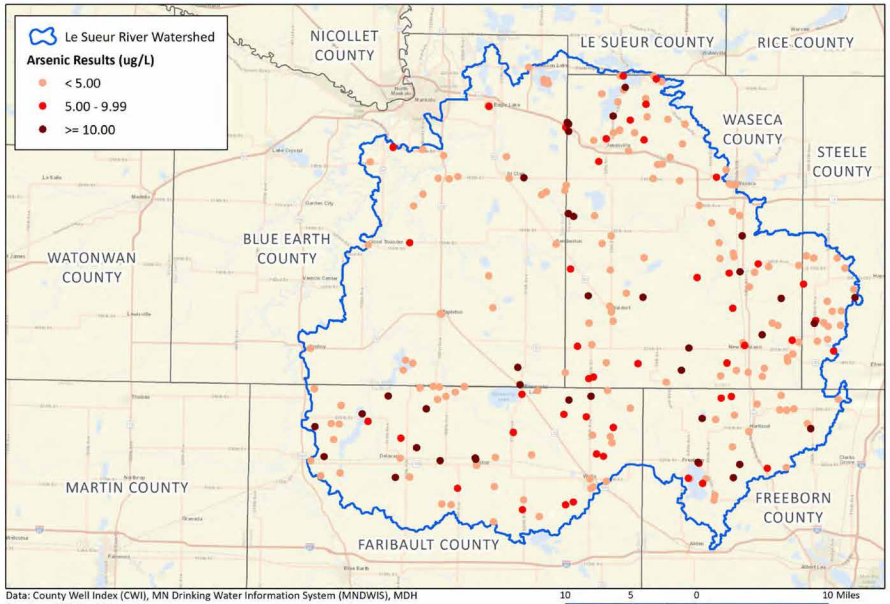
Le Sueur River Watershed - Pollution Sensitivity of Wells



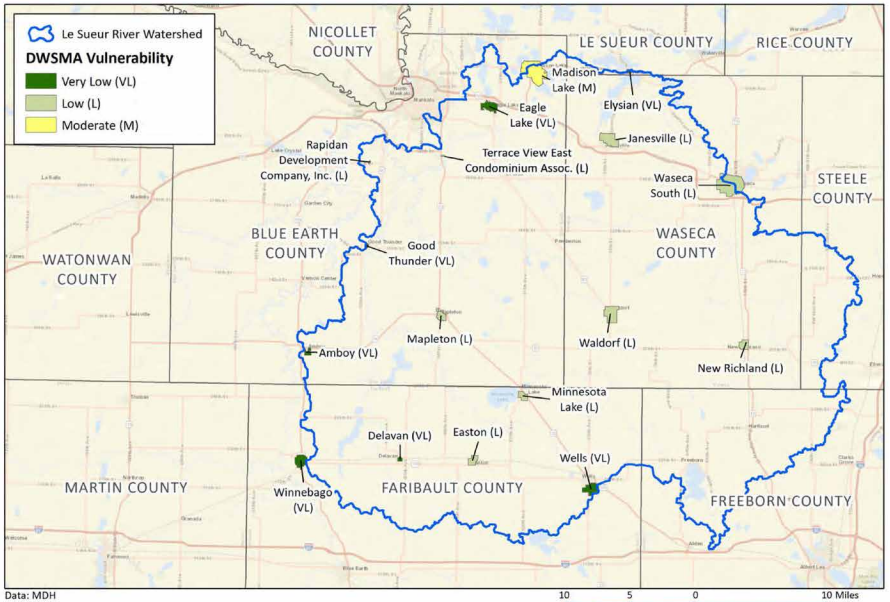
Le Sueur River Watershed - Nitrate Results

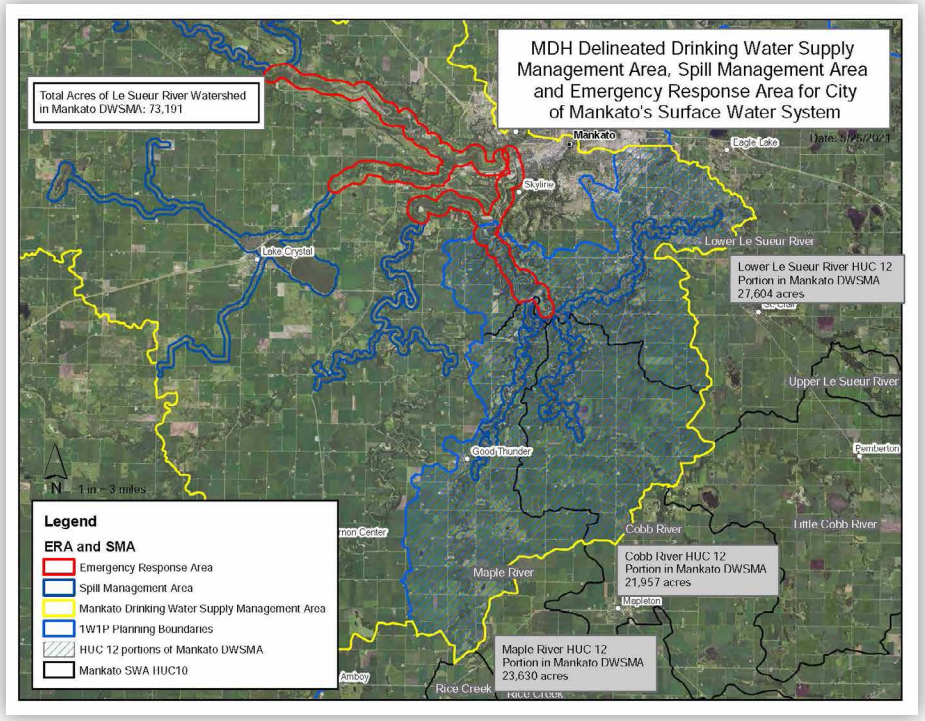


Le Sueur River Watershed - Arsenic Results



Le Sueur River Watershed - DWSMA Vulnerability





MINNESOTA POLLUTION CONTROL AGENCY

Mankato Office | 12 Civic Center Plaza | Suite 2165 | Mankato, MN 56001-8704 | 507-389-5977
800-657-3864 | Use your preferred relay service | info.pca@state.mn.us | Equal Opportunity Employer

May 24, 2021

Haley Byron
Water Resource Specialist
Waseca County
300 N State St
Waseca, MN 56093

Jill Sackett Eberhart
Board Conservationist
Board of Water and Soil Resources
11 Civic Center Plz, Ste 300
Mankato, MN 56001

RE: Response to Request for Water Management Issues and Priority Concerns to be addressed in the Le Sueur River One Watershed, One Plan

Dear Haley Byron and Jill Sackett Eberhart:

The Minnesota Pollution Control Agency (MPCA) has received your request to submit water management issues pertinent to the Le Sueur River Comprehensive Watershed Management Plan (Plan) development process. The MPCA appreciates the opportunity to provide input throughout the Plan development process. As part of the MPCA's review, we are providing the following comments we would like to see addressed in the Plan.

The MPCA and other state agencies coordinated with local partners to gather, analyze, and summarize information to develop the Watershed Restoration and Protection Strategies (WRAPS) report for the entire Le Sueur River Watershed (LRW). The following pages provide a brief summary of available information from the watershed process that includes the LRW planning area. The MPCA requests you consider this information during development of the Plan.

Background Information

The State of Minnesota employs a watershed approach to restore and protect Minnesota's rivers, lakes, and wetlands. The watershed approach includes the following processes that can be used to inform water planning:

1. Watershed monitoring and assessment
2. Stressor identification (SID) of biological impairments
3. Total Maximum Daily Loads (TMDLs)
4. WRAPS

The following pages provide a brief description of these processes and internet links for the reports associated with these efforts.

Monitoring and Assessment

In 2008, a comprehensive approach was taken to monitor and assess surface water bodies in the LRW for aquatic life, recreation, and fish consumption use support. For details on the data collected, refer to *the Le Sueur River Watershed Monitoring and Assessment Report (wq-ws3-0702001b).* https://www.pca.state.mn.us/water/watersheds/le-sueur-river. In 2018, the LRW was again monitored and assessed. The current assessment report is in draft form and information from the report will be available to the One Watershed, One Plan (1W1P) working group as it is approved and finalized.

Monitoring data are used to determine if water quality is supporting a water body's designated use. During the assessment process, data on the waterbody are compared to relevant standards. When pollutants/parameters in a waterbody do not meet the water quality standard, the waterbody is considered impaired. When pollutants/parameters in a waterbody meet the standard (e.g. when the monitored water quality is cleaner than the water quality standard), the waterbody is considered supporting. Data from three water quality monitoring programs inform water quality assessment and create a long-term data set to track progress toward water quality goals. These programs will continue to collect and analyze data in the LRW as part of Minnesota's Water Quality Monitoring Strategy. Intensive Watershed Monitoring (IWM), the Watershed Pollutant Load Monitoring Network (WPLMN) and Citizen Stream and Lake Monitoring Program (CSMP and CLMP) data provide a periodic but intensive "snapshot" of water quality conditions throughout the watershed.

Within the LRW, there are currently 109 impairments on the 2020 impaired waters list. Table 1 summarizes the listings by impairment type. Full details on the impairment listings can be found here: https://www.pca.state.mn.us/water/minnesotas-impaired-waters-list.

Table 1 Summary of water quality impairments for the Le Sueur River Watershed

Impairment Type	Number of Listings	Beneficial Use
Turbidity; Total Suspended Solids	15	Aquatic Life
Fecal Coliform; *E. coli*	11	Aquatic Recreation
Aquatic macro-invertebrate bio assessment	25	Aquatic Life
Fishes bio assessment	31	Aquatic Life
River nutrients	3	Aquatic Life
Dissolved oxygen	1	Aquatic Life
Chlorpyrifos	2	Aquatic Life
Mercury in water column	3	Aquatic Consumption
PCB's in fish tissue	8	Aquatic Consumption
Lake; Nutrient/eutrophication	5	Aquatic Recreation
Lake; Mercury in fish tissue	5	Aquatic Consumption

Stressor Identification

SID is performed on biological impairments to determine what pollutant and non-pollutant stressors are causing impairments to the aquatic biological community. The process is described in more detail and documented in the 2014 LRW Biotic SID Report: https://www.pca.state.mn.us/sites/default/files/wq-ws5-07020011.pdf for the reaches listed for aquatic life impairments (fish, aquatic macro-invertebrate impairments). Many of the reaches from the original assessment were deferred until the Tiered Aquatic Life Use (TALU) assessment process was developed. Deferred streams were reassessed for aquatic life impairments and are included in the 2020 impaired waters listings. Assessment information is available on request. While the SID process still needs to be completed for the deferred streams, impaired reaches in the 2014 report show primary stressors including, Dissolved Oxygen, Nitrate, Phosphorous, Turbidity/TSS, Habitat, Connectivity and Altered Hydrology. A table of stressors for each stream reach is available in the respective stream reach sections of the report.

Total Maximum Daily Loads

The Clean Water Act requires that TMDLs be developed for waters that do not support their designated uses. A TMDL essentially provides the allowable pollutant loading, as well as needed reductions, to attain and maintain water quality standards in waters that are not currently meeting standards. Several TMDL studies have been completed in the LRW. The TMDL reports containing impaired waterbodies and pollutant reductions located in the watershed can be found here:

Minnesota River and Greater Blue Earth River Basin TSS TMDL

https://www.pca.state.mn.us/water/minnesota-river-and-greater-blue-earth-river-basin-tmdl-tss

Le Sueur River Watershed TMDL

https://www.pca.state.mn.us/water/watersheds/le-sueur-river

Fecal Coliform TMDL Assessment for 21 Impaired Streams in the Blue Earth River Basin

https://www.pca.state.mn.us/water/tmdl/blue-earth-river-fecal-coliform-tmdl-project

Lura Lake Excess Nutrients TMDL

https://www.pca.state.mn.us/water/tmdl/lura-lake-excess-nutrients-tmdl-project

WRAPS

In each cycle of the watershed approach, rivers, lakes and wetlands across the watershed are monitored and assessed, waterbody restoration and protection strategies and local plans are developed, and conservation practices are implemented. Much of the information presented in the WRAPS report was synthesized from the Monitoring and Assessment, SID, and TMDL reports. However, the WRAPS report presents additional data and analyses including watershed-scale models and tools, detailed analyses and output from these work products, and a set of potential strategies for point and nonpoint source pollution that will cumulatively achieve, or otherwise make significant progress toward, water quality targets. The LRW WRAPS Report can be found here:
https://www.pca.state.mn.us/water/watersheds/le-sueur-river

The WRAPS table can be found on Page 32 of the report.

County and Soil and Water Conservation District (SWCD) staff, and state natural resource and conservation professionals (referred to as the WRAPS Feedback Group) were convened to inform the report and advise technical analyses. Two key products of this WRAPS report are the strategies table and the priorities section, each developed with the WRAPS Feedback Group. The strategies table outlines

high level strategies necessary to restore and protect water bodies in the Watershed, including social strategies that are key to achieving the physical strategies. The priorities section presents criteria to identify priority areas for water quality improvement, including examples of water bodies and areas that meet the prioritizing criteria.

The primary audience for the WRAPS report is local planners, decision makers, and conservation practice implementers; watershed residents, neighboring downstream states, agricultural business, governmental agencies, and other stakeholders are the secondary audience.

Goals and 10-year Targets
Among the required elements of WRAPS are timelines for achieving water quality targets and interim milestones within 10 years of strategy adoption. It is the intent of the implementing organizations in this watershed to make steady progress in terms of pollutant reduction. However, needed pollutant load reductions are generally high and will require significant adoption of conservation practices. Accordingly, as a very general guideline or goal, it is assumed that 1% to 2% of the overall needed reduction will occur per year on average. This means that a 10% reduction goal is expected to be achieved in 5 to 10 years and 50% reduction goal will take 25 to 50 years.

Again, this is a general guideline and approximation. Factors that may mean slower progress include limits in funding or landowner acceptance, challenging fixes (e.g., unstable bluffs and ravines, invasive species) and unfavorable climatic factors. Conversely, there may be faster progress for some impaired waters, especially where high-impact fixes are slated to occur or where the watershed is subject to focused efforts.

WRAPS Strategies
A set of restoration and protection strategies were developed to achieve water quality targets for waterbodies addressed in the WRAPS. The strategies are provided in Table 8 of the WRAPS report. Where possible, the strategies were derived through quantitative methods; however, in other cases, only more qualitative characterization of actions was feasible. The chief goal of providing this information is to inform local planning. Specifically, by providing an overall set of actions needed to meet the goals (over some period of years or decades), local planners can focus on a subset of actions to take on for their shorter-term (e.g., 10-year) planning cycle. This provides a means to gauge a plan's ability to make progress over time as well as make adjustments through adaptive management.

Prioritizing and Targeting
Section 5 of the LRW WRAPS Report discusses several resources to identify priority areas for planning consideration through development of the goals maps, the Hydrological Simulation Program – FORTRAN (HSPF) model maps, and the Geographic Information Systems (GIS) estimated altered hydrology maps. Priorities identified in the WRAPS include areas with the potential to mitigate pollutants and stressors when ideally managed or areas with a disproportionately high negative impact when poorly managed. Priority areas identified through the WRAPS report are included in the table below and should be further customized and focused during planning efforts.

Priority Areas	Refer to
Impaired streams and lakes (subwatersheds) including the type and number of associated impairment parameters and stressors	Table 1, Table 3, Figure 5
Lake subwatersheds with declining trends	Table 1
High loading HSPF-modeled subwatersheds	Figures 13, 16, 19
Highly hydrologically-altered subwatersheds	Figure 9

Information from the WRAPS report can be used as a starting point to prioritizing and targeting efforts in the watershed related to water quality and biological impairments activities.

Civic Engagement for WRAPS Work

Civic engagement and public participation was a major focus during the LRW project. The purpose of this project was to identify community/landowner opportunities, obstacles, and opinions on land management and water quality in the rural portion of the watershed. Ultimately, this work helped identify land management options for the purposes of surface water quality restoration and protection within the LRW. The list below summarizes the efforts taken by county, SWCD and other state agency staff to promote civic engagement and collaboration in the area.

Le Sueur River Watershed Network
LRW Network (2013) is composed of watershed residents, concerned citizens and groups, and resource agency staff. Resulting from a series of meetings that occurred between January and May of 2013, a Citizen Advisory Committee made seven recommendations to improve water quality. The summarized recommendations are in order of the committee's preference:

1. Storm water management and in-ditch storage
2. Experimentation and demonstration with temporary water storage
3. Strategically placed buffers, terraces, and grassed waterways
4. Communication and education for watershed residents
5. Less red tape
6. River channel maintenance of major snags
7. Streambank and ravine stabilization

Information from the group can be found at their website:
https://lesueurriverwaters.wixsite.com/network

Lakes Focus Group
A one-time meeting was held in February 2014, to solicit the preferred restoration and protection strategies of citizens who are interested in improving and protecting lakes within the LRW. The preferred strategies to implement in Lake Watersheds, in order of preference, were:

1. Lake buffers, setbacks, and native/healthy lakescaping

2. Public education/outreach
3. Nutrient management
4. Improved storm/drainage water management
5. Wetland restoration

Resident and Farmer Interviews

The SWCD staff designed and performed interviews with residents in the LRW Priority Management Zone Identification Project (MPCA 2014f) http://www.pca.state.mn.us/index.php/view-document.html?gid=21445.

The objectives of these interviews were to: 1) connect residents and local staff, 2) learn resident opinions and concerns regarding water quality, and 3) provide maps and resources to spur conversations and identify conservation opportunities. Generalized themes from these interviews included:

- Farming has undergone significant changes over the last several decades. A wide spectrum of understanding and interest exists regarding water quality, conservation practices, and sustainable agriculture. Most farmers feel they are doing a good job with conservation, but economics are the largest factor in making agricultural land management choices.
- While many farmers have made some conservation improvements, many more opportunities still exist. For instance, some who practice no-till consider this a competitive edge, but most farmers have (real or perceived) obstacles to using no-till. Several potential projects and obstacles to adopting conservation practices were identified.
- The general public sees a need for increased conservation. In one county, the percent of interviewees that thought the following BMPs should be increased is: 72% increased vegetation, 43% riparian buffers, 29% ponds/wetlands, 21% conservation/sediment control structures, 18% progressive drainage design, 17% river/bank projects, 12% lake shore restoration, and 10% urban storm water BMPs.

Staff-Identified Priorities and Challenges

County SWCD, Water Planning, and Environmental staff work directly with the citizens and natural resources of the watershed. Furthermore, these local staff write locally-focused conservation plans and assist landowners with most of the conservation implementation that occurs. For these reasons, the priorities and challenges to local staff can help state agency and other partners focus state financial and technical resources more effectively. County staff priorities (as submitted by staff) are included with the watershed resident interviews (link above). Summarized staff priorities and challenges include:

- **Staff identified priority management areas:**
  - Blue Earth - lakes, urban development, bluff, ravine and field erosion, water retention and wetland restoration
  - Waseca - demonstration sites including: wetlands, floodplain easements, and stream restoration sites
  - Faribault - drainage watershed approach using a redetermination of benefits
  - Freeborn - lake and stream restoration, wetlands, water retention/infiltration, vegetative buffers

- More technical and financial resources should be provided to improve SWCD operations. Limited numbers of staff and turnover is a problem due to inconsistent funding, resulting in loss of producer rapport and significant time put into training new staff.
- Local staff must balance the sometimes conflicting interests of citizens, agencies, and local boards. More state level support is needed to protect water resources. State agencies could improve their organization and effectiveness communicating with local staff. The scale of programs/boundaries should be well-planned and flexible to meet local needs.

MPCA Water Management Priorities in the Le Sueur River Watershed

The MPCA recommends focusing on the following priorities in the LRW planning process. The priorities were identified based on the existence of these issues watershed wide as identified by monitoring and assessment, stressor identification, and the WRAPS.

Biota (Aquatic Life)

Address the stressors to aquatic life in the Plan. Aquatic life use impairments within the watershed are complex. Biotic impairments are a result of nonpoint source pollution and localized stress linked to poor habitat condition and altered hydrology. High nitrogen and phosphorus levels are likely impacting fish and macroinvertebrate communities in the southern part of the watershed. Stabilizing hydrology, increasing riparian buffer width, and stabilizing stream banks would greatly help the in-stream habitat.

Altered Hydrology

Seek changes to the landscape that reduce the volume, rates, and timing of runoff and increase the base flows needed to prevent continued and further impairments. A primary stressor to the majority of the biotic impairments in the watershed is altered hydrology. Other pollutants (turbidity, nutrients, bacteria, etc.) are delivered because of altered hydrology. Managing the hydrology to provide a consistent base flow is imperative for the survival of the biological communities in the watershed. Increasing rainfall infiltration and water retention, and improving riparian conditions are activities that are needed to stabilize hydrology and reduce impairments.

Turbidity and Total Suspended Solids (Aquatic Life)

Reduce and control sediment entering the water bodies of the watershed. Total suspended solids (TSS), and turbidity (measure of water clarity affected by sediment, algae, and organic matter), are common impairments and stressors to aquatic life in the watershed. Reducing TSS will also likely reduce the means by which other pollutants are conveyed (phosphorus and bacteria).

Nutrients (Aquatic life/Eutrophication)

Reduce nutrient delivery to the watershed. High levels of nutrients (phosphorus) are driving nuisance algae blooms in the watershed's impaired lakes, and threatening other lakes that are on the verge of becoming impaired. Algae blooms can deprive lakes of their oxygen as the algae die off and decay, causing fish kills. High levels of algae cause increased levels of turbidity, degrading aquatic recreation and aquatic life. Blue-green algae can also cause serious health issues for humans and pets.

Management plans that appropriately value the nutrient worth of manure and previous crops and focus on the timing and intensity of the fertilizers and manure applications will help reduce the amount of phosphorus and nitrogen reaching the river. These reductions would also aid in the low dissolved oxygen problems present in some parts of the watershed.

Bacteria (Aquatic Recreation)

Control pathways delivering human and livestock feces to the LRW. High levels of bacteria are widespread across the western portion of the watershed. The abundance of feedlots, feedlot runoff, improper manure management, and over-grazed pastures in the watershed may correlate with this finding. High bacteria levels are also attributed to noncompliant septic systems.

Other Le Sueur specific MPCA Priorities

Watershed wide practice implementation

While targeting of specific practices is important to prioritize funding that provides the greatest reductions/cost, there is a need in the LRW to provide opportunities for practices throughout the watershed that would benefit water quality at the HUC-8 scale. The MPCA recommends funding that is flexible and available continuously, watershed wide, to provide options for landowners to try soil health and cover crop practices, work with SWCD staff, and communicate with other landowners who are implementing these practices. The MPCA recommends developing a network of local staff and operators who can provide technical, financial, and practical assistance to landowners implementing soil health principles.

Drainage Watershed Management

Currently, drainage improvement projects have limited input from local staff to aid in the integration of conservation practices that would help to alleviate hydrology concerns and downstream impacts from increases in water volume. The MPCA recommends early coordination with landowners, SWCD staff, agencies, and engineers to develop improvement projects that account for volume increases.

In most engineering designs of drainage improvement projects, the existing conditions are based on the original design and upgrades. Many drainage improvement projects seek an increase in the drainage coefficient from 0.1 to 0.25 inches/day to a more modern 0.5 inches/day for tile and 1 inch/day for open ditches. Engineering reports often indicate that drainage pipe is in disrepair and the as built coefficient isn't meeting its original design. This suggests that restoring (maintaining) the system to its original capacity would result in an increase in drainage volume.

The MPCA encourages the planning group to discuss watershed drainage management with an emphasis on finding ways to store and/or reduce the increased volume of water based on the increase in drainage coefficient in improvement projects by working with land owners in areas where drainage improvement will eventually be considered.

Utilize the Le Sueur Network

The LRW Network group has been meeting for a number of years to discuss water quality and quantity issues within the watershed. They have developed priority issues and areas that MPCA recommends are considered in the 1W1P process. Members of the group are willing to participate in the planning process.

Calibrate any Modeling efforts to HSPF load estimates

The LRW HSPF model has recently been recalibrated. We would recommend that any modeling efforts for implementation utilize the loading information based on the HSPF numbers and the WPLMN data to calibrate loads so that reduction calculations would be comparable to monitored loading estimates.

The MPCA recognizes all the hard work and cooperation from the local partners within the Le Sueur Watershed, and offers our continued support in local water planning. Thank you for the opportunity to provide comments during the planning process. If we may be of further assistance, please contact Paul Davis at paul.a.davis@state.mn.us, or 507-344-5246, or at the MPCA's Mankato office.

Sincerely,

Paul Davis

This document has been electronically signed.

Paul Davis
Environmental Specialist
Watershed Division

cc: Shaina Keseley, BWSR, Clean Water Specialist
Ed Lenz, BWSR, Southern Region Manager
Julie Westerlund, BWSR, One Watershed, One Plan Coordinator
Scott Matteson, MDA, Hydrologist
Margaret Wagner, MDA, Pesticides and Fertilizer Management Section Manager
Jennifer Ronnenberg, MDH, Regional Planner
Carrie Raber, MDH, Groundwater Restoration and Protection Strategies Coordinator
Dan Girolamo, DNR, Area Hydrologist
Robb Collett, DNR, Southern Regional Manager, Ecological and Water Resources Division
Barbara Weisman, DNR, Clean Water Operations Consultant
Juline Holleran, MPCA Watershed Information and Assistance
Jeff Risberg, MPCA, Watershed Unit Coordinator

PD:jdf

Waseca Soil and Water Conservation District

300 North State Street
Waseca, MN 56093
507-835-0603
www.wasecaswcd.org

To: Le Sueur River Watershed Partnership

RE: Priority issues and plan expectations.

Waseca SWCD would like to take this opportunity to communicate our local priority areas and priority conservation efforts in relation to comprehensive watershed management in the Le Sueur River Watershed.

Priority areas include Iosco Creek, Bull Run Creek, JD6 watershed, and CD 47 Watershed. These 4 watersheds comprise 17% of Waseca County and 7% of the Le Sueur Watershed. These areas have additional modeling information available. Iosco Creek has been a long-time priority of Waseca SWCD. We have been doing water quality monitoring in this watershed in the last 4 years and monitoring results show the need for water quality improvements. The Iosco Creek is the largest tributary to Lake Elysian. Lake Elysian is the largest recreational lake in the Le Sueur Watershed in Waseca County. Iosco Creek has an impaired use for Aquatic Life and Lake Elysian has an impairment for Nutrients.

Bull Run Creek has also been a long-time priority area for Waseca SWCD and monitored for water quality the last 4 years. Monitoring results also show the need for water quality improvements in E. coli, nitrogen, sediment, and phosphorus. Bull Run Creek is important because it is a larger catchment in the Le Sueur watershed and has an impaired use for Aquatic Life.

JD6 and CD47 are tributaries to Boot Creek and are the source of the water that flows through the City of New Richland. New Richland has suffered from flooding in the past and is a high concern for residents. Waseca County is in the process of completing an accelerated implementation grant through the Clean Water Fund to identify potential practices. Boot Creek is impaired by E. coli. Practices that have a water storage or peak flow reduction component should be prioritized in these watersheds.

St Olaf Lake should be a priority for protection. This lake is currently not identified as having a nutrient impairment or impaired uses and we would like to keep them from meeting those designations. It does have a downward water quality trend. St. Olaf Lake has a high amount of residential development around the lake and is highly valued for recreation.

Priority practices should include soil health, wetland restorations, stabilizing concentrated flow erosion, snag removal from the Le Sueur River channel, water storage, and perennial cover. Priority efforts should include education, public outreach, maintaining skilled staff, mitigating altered hydrology, and providing financial assistance for projects with public benefit.

We look forward to being active partners for the betterment of the Le Sueur River Watershed.

Waseca SWCD Board of Supervisors

(All programs and services of the Waseca County Soil and Water Conservation District are offered on a non-discriminatory basis, without regard to race, color, national origin, religion, sex, marital status, or handicap)

C

APPENDIX C: DATA AND COMMENTS

C

APPENDIX C: DATA AND COMMENTS

Introduction

Issues, resources, and priorities gathered from documents, reports, comment letters, water plans, and the kickoff meeting were categorized into resource categories and subcategories. Categories included emerging concerns, groundwater, leadership, natural resources, quality of life, and surface water. Subcategories for each concern are summarized in this appendix.

Check out this information online!
bit.ly/appendixC_LSRW

Aquatic Consumption

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Le Sueur River WRAPS Report	Several lakes and stream reaches are impaired for aquatic consumption (due to mercury and PCBs).		
Le Sueur River Watershed Monitoring and Assessment Report	Aquatic consumption impairments span the entire length of the LeSueur River main stem due to the presence of polychlorinated biphenyl (PCBs).		
Science Briefing Booklet - Le Sueur River Watershed	Fish were tested in the lakes and rivers listed at right in order to determine the levels of Mercury, Perfuorochemicals (PFCs), and Polychlorinated biphenyls (PCBs). Assessment results are summarzed here and more detail can be found in MPCA's Monitoring and Assessment Report.		

Aquatic Habitat

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
DNSR response to Le Sueur notification	WRAPS – The cycle one Watershed Restoration and Protection Strategies (WRAPS) Report for the Le Sueur River watershed identified altered hydrology (particularly base flow and peak flow), elevated sediment and total suspended solids (TSS) concentrations, elevated nitrogen concentrations, elevated phosphorus concentrations, elevated E.coli / Fecal Coliform concentrations, low dissolved oxygen, and poor habitat as the primary pollutant sources and/or stressors.	yes	
DNR Priority Issues Letter_Le Sueur Watershed_mailed	Land Use Impacting Terrestrial and Aquatic Habitat Utilize land use tools, such as a zoning codes and ordinances, to address new challenges that negatively impact our ecosystems and confine surface water hydrology.	yes	
MPCA Priority Issues Le Sueur 1W1P 2021-2031	While the SID process still needs to be completed for the deferred streams, impaired reaches in the 2014 report show primary stressors including, Dissolved Oxygen, Nitrate, Phosphorous, Turbidity/TSS, Habitat, Connectivity and Altered Hydrology.		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Biota (Aquatic Life) Address the stressors to aquatic life in the Plan. Aquatic life use impairments within the watershed are complex. Biotic impairments are a result of nonpoint source pollution and localized stress linked to poor habitat condition and altered hydrology. High nitrogen and phosphorus levels are likely impacting fish and macroinvertebrate communities in the southern part of the watershed. Stabilizing hydrology, increasing riparian buffer width, and stabilizing stream banks would greatly help the in-stream habitat.	yes	
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Nutrients (Aquatic life/Eutrophication) Reduce nutrient delivery to the watershed. High levels of nutrients (phosphorus) are driving nuisance algae blooms in the watershed's impaired lakes, and threatening other lakes that are on the verge of becoming impaired. Algae blooms can deprive lakes of their oxygen as the algae die off and decay, causing fish kills. High levels of algae cause increased levels of turbidity, degrading aquatic recreation and aquatic life. Blue-green algae can also cause serious health issues for humans and pets.	yes	
Le Sueur River WRAPS Report	Of the 74 stream reaches that were monitored, 22 were assessed: one supported aquatic life, 12 were impaired for impacts to aquatic life, 8 were impaired for impacts to aquatic life and impaired for impacts to aquatic recreation, and one was impaired for impacts to a limited resource water.		
Le Sueur River WRAPS Report	Many of the aquatic life impairments in the Le Sueur River Watershed were due to low IBI scores, which means that the fish or macroinvertebrate populations were low or dominated by pollution-tolerant species.		
Le Sueur River WRAPS Report	Refer to Table 3 for the identified stressors which include: altered hydrology; poor habitat; and high turbidity, nitrate, and phosphorus concentrations; low DO concentrations; and lack of connectivity.		
Le Sueur River WRAPS Report	Those low base flow conditions have been conclusively linked to low DO conditions in at least one river reach (as discussed in the Le Sueur River watershed TMDL (MPCA 2015)) but likely have additional consequences to aquatic life (as discussed in the Stressor ID Report (MPCA 2014c)).		
Le Sueur River WRAPS Report	For at least one of the reaches where low DO was found to be a pollutant and/or stressor (Little Cobb River), HSPF modeling indicates that low base flow is a primary cause of this stressor.		
Le Sueur River WRAPS Report	Altered hydrology is the primary cause of degraded habitat throughout the watershed; changes in the connectivity, timing, and amount of flow have created stream instability, vegetation loss, and reduction or elimination of floodplain connectivity. Additional habitat concerns in the watershed include degraded riparian conditions, including loss of riparian vegetation.		
Le Sueur River Watershed Monitoring and Assessment Report	Only two stream reaches were found to be fully supporting of aquatic life use in the LeSueur River Watershed.		
Le Sueur River Watershed Monitoring and Assessment Report	Habitat assessments also indicate that there many problems in the watershed. Water chemistry impairments involving low dissolved oxygen and high bacteria concentrations are common across the watershed's tributaries.		
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		Little Le Sueur River
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		County Ditch 15-2
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		County Ditch 12
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		County Ditch 19
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		Iosco Creek
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		County Ditch 6
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		Unnamed Creek (07020011-510)
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		Le Sueur River (07020011-507)
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		Le Sueur River (07020011-501)
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		Little Cobb River (07020011-504)
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		Cobb River (07020011-568)
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		Cobb River (07020011-556)
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		Rice Creek (07020011-531)
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		Maple River (07020011-535)

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Habitat		Maple River (07020011-534)
Le Sueur River Watershed Biotic Stressor Identification Report	The causes and potential sources for connectivity in the Le Sueur River watershed are modeled in Figure 15. Impoundments placed on rivers and streams can create barriers to fish passage and can alter the aquatic community.		
Bull Run Creek Subwatershed Assessment	Research has also found poor habitat for fish and wildlife. The numbers of mussels, fish and bugs — in both diversity and abundance — are much lower in the Le Sueur than for similar river systems		
Freeborn Lake Subwatershed Assessment	Minnesota Department of Natural Resources initiated a project to develop a Lake Management Plan that included a lake draw down and dam replacement to support wildlife in the lake (2015-2019).		Freeborn Lake
Freeborn Lake Subwatershed Assessment	A Future of Freeborn Lake Citizen Survey was administered in April 2015. Most survey respondents noted that the water quality, recreation, fishing, wildlife and aesthetics in Freeborn Lake needed improvement.		Freeborn Lake
Freeborn Lake Subwatershed Assessment	Desired Outcomes: Improve the health of the Freeborn Lake Watershed by reducing nutrient inputs, improving soil health and increasing water storage and perennial vegetation on the landscape. Soil and water conservation practices, protecting and restoring critical habitats, and local partnerships are essential components to enhance water quality and improve fish and wildlife habitats		Freeborn Subwatershed
Science Briefing Booklet - Le Sueur River Watershed	Most of the assessed streams and rivers currently do not support aquatic life.		

Aquatic Recreation

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Freeborn County Comprehensive Water Plan Amendment to Implementation 2018-2021	Surface Water Concerns Goals Summary (Watershed/Impairment) Goal #8 Provide recreational opportunities on public waters.	yes	
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Increasing Demand for Outdoor Recreation Opportunities Take steps to meet current and emerging needs for outdoor recreation in the watershed, to attract tourism and enhance the quality of life for those who live here.	yes	
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Nutrients (Aquatic life/Eutrophication) Reduce nutrient delivery to the watershed. High levels of nutrients (phosphorus) are driving nuisance algae blooms in the watershed's impaired lakes, and threatening other lakes that are on the verge of becoming impaired. Algae blooms can deprive lakes of their oxygen as the algae die off and decay, causing fish kills. High levels of algae cause increased levels of turbidity, degrading aquatic recreation and aquatic life. Blue-green algae can also cause serious health issues for humans and pets.	yes	
Le Sueur River WRAPS Report	Of the eleven lakes that were monitored, two supported aquatic recreation, five were impaired for impacts to aquatic recreation, and five were not assessed due to insufficient data to make a scientifically conclusive finding (Table 1).		
Le Sueur River Watershed Monitoring and Assessment Report	Eight reaches were able to be assessed for aquatic recreation and only one was found to be fully supporting.		
Assessment Report of Selected Lakes Within the Le Sueur River Watershed Minnesota River Basin	Many of the Le Sueur River watershed lakes possessing assessment level data were determined to be nonsupporting of recreational use		
Assessment Report of Selected Lakes Within the Le Sueur River Watershed Minnesota River Basin	Overall, the majority of these lakes possessing assessment level data have been determined to be non-supporting of recreational use.		
Le Sueur River Watershed TMDL	Over-abundance of aquatic plants can limit recreation activities and invasive aquatic species such as curly-leaf pondweed can change the dynamics of internal P loading.		Madison, Elysian, Eagle, Freeborn
Freeborn Lake Subwatershed Assessment	Freeborn Lake is non-supporting of aquatic recreational use and listed as impaired under the 2018 303(d) Impaired Waters List.		Freeborn Lake
Freeborn Lake Subwatershed Assessment	Additionally, based on the Total phosphorus and chlorophyll-a assessment standards, Freeborn Lake was determined to be non-supporting of aquatic recreational use and was listed as impaired on the 2012 303(d) Impaired Waters List" (MPCA, 2012).		Freeborn Lake
Freeborn Lake Subwatershed Assessment	A Future of Freeborn Lake Citizen Survey was administered in April 2015. Most survey respondents noted that the water quality,		Freeborn Lake
Freeborn Lake Subwatershed Assessment	At the meeting in November 2018, after the successful lake reclamation project, citizens strongly voiced an interest in figuring out ways to maintain the lake's improved water quality. They valued the cleaner water, healthier lakeshore, more abundant wildlife, and improved recreational opportunities. Citizens expressed an interest in developing strategies both in the city and upland to reduce phosphorus loads into the lake. More detailed meeting notes can be found in Appendix B.		Freeborn Lake

Capacity

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Waseca County Local Water Management Plan Amendment 2015-2018	Build Local Capacity		
Blue Earth Water Management Plan 2017-2026	Oranizational Capacity - making meeasureable progress to achieve watershed goals or to implement strategies in the BEC water managment plan cannot be accomplished with the current level of financial and staff resources to water management in the county		
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Objective 5: Increase habitat and plant diversity in areas that will have multiple benefits including erosion control, water quality filtering, wetland establishment, and general habitat improvement for wildlife and pollinators.		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	More technical and financial resources should be provided to improve SWCD operations Limited numbers of staff and turnover is a problem due to inconsistent funding, resulting in loss of producer rapport and significant time put into training new staff.		
Waseca SWCD_Priority Issues Letter	Priority efforts should include eduction, public outreach, maintaining skilled staff, mitigating altered hydrology, and providing financial assistance for projects with public benefit	yes	
Bull Run Creek Subwatershed Assessment	Some of the challenges working in this subwatershed have included staff turnover, limited access to engineering services, as well as citizen leader health problems.		Bull Run Subwatershed

Climate Change and Resilience

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Faribault County Water Plan 2018-2027	Changes and Trends Portaining to Climate		
BWSR response to Le Sueur notification	Climate Adaption and Landscape Resiliency – BWSR strongly encourages your planning partnership to consider the potential for more extreme weather events and their implications for the water and land resources of the watershed in the analysis and prioritization of issues. The weather record for the Le Sueur River watershed planning area shows increased frequency and severity of extreme weather events, which has a direct effect on local water management. Adjustments involving conservation and fieldwork planning and implementation should be explored; as an example, the use of an updated precipitation frequency chart such as the NOAA Atlas 14 when designing conservation projects. An additional source of information for use in the planning process is the BWSR Climate Resiliency Toolbox. The white paper from the Minnesota Interagency Climate Adaptation Team titled "Building Resiliency to Extreme Precipitation in Minnesota" also provides resiliency strategies related to this topic. Climate Adaption and Landscape Resiliency – BWSR strongly encourages your planning partnership to consider the potential for more extreme weather events and their implications for the water and land resources of the watershed in the analysis and prioritization of issues. The weather record for the Le Sueur River watershed planning area shows increased frequency and severity of extreme weather events, which has a direct effect on local water management. Adjustments involving conservation and fieldwork planning and implementation should be explored; as an example, the use of an updated precipitation frequency chart such as the NOAA Atlas 14 when designing conservation projects. An additional source of information for use in the planning process is the BWSR Climate Resiliency Toolbox. The white paper from the Minnesota Interagency Climate Adaptation Team titled "Building Resiliency to Extreme Precipitation in Minnesota" also provides resiliency strategies related to this topic.	yes	
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Hydrologic Conditions – Altered Hydrology The impacts of altered hydrology in this watershed are significant. Since 1990, stream channel-forming flows have almost doubled. Flooding in recent years has severely impacted the communities of St Clair, New Richland, and rural areas near Mankato. Frequent high flows and cumulative flow volume are impacting homes, roads, private property, and recreational opportunities. Changing land use and climate—such as shifts in cropping, unmitigated drainage improvements, new impervious surfaces, and higher rainfall volume and duration—have increased the volume of surface water in the Le Sueur River watershed.	yes	
Le Sueur River WRAPS Report	Some of the most recent hydrologic alterations include increases in tiled acres, tile density, precipitation, the replacement of Conservation Reserve Program (FSA 2013) land with cropped land, and increased impervious surfaces.		
Le Sueur River WRAPS Report	This increased river flow corresponds to increased precipitation coupled with decreased ET.		
Le Sueur River WRAPS Report	The increase in the Le Sueur River's flow is due to hydrologic alterations made by both humans (including installing artificial drainage and changing crop types) and the climate (increased precipitation and temperatures).		
Le Sueur River Watershed Biotic Stressor Identification Report	In addition, mean precipitation and extreme event magnitude and frequency have increased, exacerbating land use-driven hydrologic alterations.		
An Integrated Sediment Budget for the Le Sueur River Basin	Any further increases in intense rainfall events over the next century in the upper Midwest are likely to further accelerate sediment supply through hydrologic amplification of naturally-sensitive channel reaches.		Le Sueur River
An Integrated Sediment Budget for the Le Sueur River Basin	In addition, mean precipitation has increased in Minnesota, along with an increase in the frequency and magnitude of extreme events, exacerbating these land use-driven hydrologic alterations.		Le Sueur River
Boot Creek Subwatershed Assessment	The community of New Richland has been experiencing record precipitation events and significant flooding problems over the past few years. The community has suffered from numerous devastating flooding events. Community members were motivated to come together to seek solutions to the flooding problem.		New Richland
Science Briefing Booklet - Le Sueur River Watershed	Many researchers are attributing increased flows to three primary factors: (1) An upward trend of precipitation amounts and intensities. (2) Reduced spring evapotranspiration and increased spring runoff due to the gradual shift from perennial plant cover (prairie, pasture) and winter annuals to row crops. (3) Increasing density of tile and ditch drainage to remove water for row crop production.		

Collaboration

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified	Notes
Faribault County Water Plan 2018-2027	Goal 2. Address the quality of surface water through strategies to conserve and manage soil health; strategies to reduce, trap, or treat nutrients and sediment; and information sharing on sustainable farming options.			
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Surface Water Concerns Goals Summary (Watershed/Impairment) Goal #4 Partner with other agencies to improve surface waters.	yes		
Blue Earth Water Management Plan 2017-2026	Goal: Increase Adoption of voluntary best management practices to protect and improve soil health and water quality			SWCD ongoing partnerships
Blue Earth Water Management Plan 2017-2026	Goal: Minimize near channel erosion, erosion hazards and mitigation costs throughout the county			Planning and partnering, watershed management
Blue Earth Water Management Plan 2017-2026	Goal: Drainage projects plans will identify potential wetland preseration and restoration projects, creation of water quality improvements, or flood control project to provide measurable water quality benefits in receiving waters			
Blue Earth Water Management Plan 2017-2026	Goal: Protect, enhance, and restore wetlands in areas to provide important water quality, wildlife, and groundwater protection functions in local watersheds			Wetland planning
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Objective 5: Increase habitat and plant diversity in areas that will have multiple benefits including erosion control, water quality filtering, wetland establishment, and general habitat improvement for wildlife and pollinators			pheasants forever farm bill program
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Local staff must balance the sometimes conflicting interests of citizens, agencies, and local boards. More state level support is needed to protect water resources. State agencies could improve their organization and effectiveness communicating with local staff. The scale of programs/boundaries should be well-planned and flexible to meet local needs.			

Altered Hydrology

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Faribault County Water Plan 2018-2027	altered hydrology	Yes	
Faribault County Water Plan 2018-2027	Prevent additional impacts of altered hydrology through regulatory controls and better planning of drainage activities		
Faribault County Water Plan 2018-2027	Goal 1. Address impacts of altered hydrology, decreased evapotranspiration and storage due to vegetation, land use, and drainage changes		
Blue Earth Water Management Plan 2017-2026	Goal: Increase Adoption of voluntary best management practices to protect and improve soil health and water quality		
Blue Earth Water Management Plan 2017-2026	Goal: Drainage projects plans will identify potential wetland preseration and restoration projects, creation of water quality improvements, or flood control project to provide measurable water quality benefits in receiving waters		
BWSR response to Le Sueur notification	WRAPS – The cycle one Watershed Restoration and Protection Strategies (WRAPS) Report for the Le Sueur River watershed identified altered hydrology (particularly base flow and peak flow), elevated sediment and total suspended solids (TSS) concentrations, elevated nitrogen concentrations, elevated phosphorus concentrations, elevated E.coli / Fecal Coliform concentrations, low dissolved oxygen, and poor habitat as the primary pollutant sources and/or stressors.	yes	
BWSR response to Le Sueur notification	Altered Hydrology – The hydrologic conditions of the subwatersheds in this planning area have changed over time. In recent decades, more precipitation, more runoff, and more runoff per unit of precipitation has been observed. Those hydrologic changes in combination with other changes have contributed to instability of natural and artificial watercourses, degradation of wetland habitats, loss of agricultural productivity, and have increased the risk of flood damages. Recognizing altered hydrology as a priority issue in the plan will help ensure that a driving factor behind many related issues is directly addressed.	yes	
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Hydrologic Conditions – Altered Hydrology The impacts of altered hydrology in this watershed are significant. Since 1990, stream channel-forming flows have almost doubled. Flooding in recent years has severely impacted the communitos of St Clair, New Richland, and rural areas near Mankato. Frequent high flows and cumulative flow volume are impacting homes, roads, private property, and recreational opportunities. Changing land use and climate—such as shifts in cropping, unmitigated drainage improvements, new impervious surfaces, and higher rainfall volume and duration—have increased the volume of surface water in the Le Sueur River watershed.	yes	
Faribault County SWCD_Priority Concerns Letters	Goal 1. Address impacts of altered hydrology and drainage changes (pg 30).	yes	Bass Lake, Rice Crook
FaribaultCounty1W1PPrioritylssuesSigned 20210504	Goal 1. Address impacts of altered hydrology and drainage changes (pg 30).	yes	
MPCA Priority Issues Le Sueur 1W1P 2021-2031	While the SID process still needs to be completed for the deferred streams, impaired reaches in the 2014 report show primary stressors including, Dissolved Oxygen, Nitrate, Phosphorous, Turbidity/TSS, Habitat, Connectivity and Altered Hydrology.		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	priority areas - Highly hydrologically-altered subwatersheds		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Biota (Aquatic Life) Address the stressors to aquatic life in the Plan. Aquatic life use impairments within the watershed are complex. Biotic impairments are a result of nonpoint source pollution and localized stress linked to poor habitat condition and altered hydrology. High nitrogen and phosphorus levels are likely impacting fish and macroinvertebrate communities in the southern part of the watershed. Stabilizing hydrology, increasing riparian buffer width, and stabilizing stream banks would greatly help the in-stream habitat.	yes	
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Altered Hydrology Seek changes to the landscape that reduce the volume, rates, and timing of runoff and increase the base flows needed to prevent continued and further impairments. A primary stressor to the majority of the biotic impairments in the watershed is altered hydrology. Other pollutants (turbidity, nutrients, bactena, etc.) are delivered because of altered hydrology. Managing the hydrology to provide a consistent base flow is imperative for the survival of the biological communities in the watershed. Increasing rainfall infiltration and water retention, and improving riparian conditions are activities that are needed to stabilize hydrology and reduce impairments.	yes	
Waseca SWCD_Priority Issues Letter	Priority efforts should include eduction, public outreach, maintaining skilled staff, mitigating altered hydrology, and providing financial assistance for projects with public benefit	yes	
Le Sueur River WRAPS Report	The ditching and drainage of hydric soils and wetland basins that facilitated European settlement and farming has caused significant changes to the ecosystems and hydrology of the watershed.		
Le Sueur River WRAPS Report	Refer to Table 3 for the identified stressors which include: altered hydrology; poor habitat; and high turbidity, nitrate, and phosphorus concentrations; low DO concentrations; and lack of connectivity.		
Le Sueur River WRAPS Report	Increased river flows and flashiness (or rapid increases after rain) are obvious forms of altered hydrology.		
Le Sueur River WRAPS Report	This information can be used to understand the cause and extent of altered hydrology and target conservation work aimed at mitigating altered hydrology.		
Le Sueur River WRAPS Report	The increase in the Le Sueur River's flow is due to hydrologic alterations made by both humans (including installing artificial drainage and changing crop types) and the climate (increased precipitation and temperatures).		
Le Sueur River WRAPS Report	Furthermore, this watershed cannot improve without substantial mitigation of altered hydrology.		
Le Sueur River WRAPS Report	The watershed has geologic properties (as discussed in Section 2) that make it susceptible to high erosion; however, the altered hydrology within the watershed has exacerbated sediment loadings – unnaturally high river flows accelerate river bank/bluff erosion.		
Le Sueur River WRAPS Report	priority areas - Highly hydrologically altered subwatersheds		
Le Sueur River Watershed Monitoring and Assessment Report	Land use modification and hydrologic alteration including drainage and field tiling may be contributing factors to the observed poor water quality conditions.		
Le Sueur River Watershed Monitoring and Assessment Report	Land use modification and hydrologic alteration including drainage and field tiling may be contributing factors to the observed poor water quality conditions.		
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		Little Le Sueur River
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		County Ditch 15-2
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		County Ditch 12

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		County Ditch 19
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		Iosco Creek
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		County Ditch 6
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		Unnamed Creek (07020011-510)
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		Le Sueur River (07020011-619)
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		Le Sueur River (07020011-507)
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		Le Sueur River (07020011-501)
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		Little Cobb River (07020011-504)
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		Cobb River (07020011-568)
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		Cobb River (07020011-556)
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		Rice Creek (07020011-531)
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		Maple River (07020011-535)
Le Sueur River Watershed Biotic Stressor Identification Report	Altered Hydrology		Maple River (07020011-534)
Le Sueur River Watershed Biotic Stressor Identification Report	Decreases in bank stability and altered hydrology can also lead to sediment loss from the stream banks, often caused by perturbations in the landscape such as channelization of waterways, tile drainage, riparian land cover alteration, and increases in impervious surfaces		
Le Sueur River Watershed Biotic Stressor Identification Report	Flow alteration results in increased flows, change in duration of flows, flashiness, decreased baseflow, loss of groundwater recharge, changes in floodplain connection, changes to habitat, and changes in timing of flows. Flow alteration can be devastating to a biological community.		
Le Sueur River Watershed Biotic Stressor Identification Report	Significant changes to land use and subsequently, hydrology, have impacted the Le Sueur River Watershed, the loss of wetlands and wetland functions: water storage, evapotranspiration, and soil infiltration, coupled with an increase in drainage and natural precipitation events, has compounded the watershed's stressors. The conversion of the prairie ecosystem to agricultural production and the drainage of wetland basins have drastically altered the drainage pattern and drainage area within the watershed (Figure 16).		
Le Sueur River Watershed Biotic Stressor Identification Report	The extensive tile and ditch network has increased connectivity between uplands and the channel network, effectively increasing both the drainage area and efficiency.		
An Integrated Sediment Budget for the Le Sueur River Basin	The nearly complete transformation of the land surface, vegetation, and hydrology over the past two centuries has increased these already large sediment loadings by a factor of four to five.		Le Sueur River
An Integrated Sediment Budget for the Le Sueur River Basin	Because of the geologic history and setting, the near-channel areas are vulnerable to accelerated erosion, and hydrologic changes in the upper watershed have had large impacts on sediment loading.		Le Sueur River
An Integrated Sediment Budget for the Le Sueur River Basin	An extensive tile and ditch network has increased connectivity between uplands and the channel network, effectively increasing both the drainage area and the efficiency of drainage.		Le Sueur River
Science Briefing Booklet - Le Sueur River Watershed	Today, almost 90 percent of prairie wetlands across Minnesota have been lost.		
Science Briefing Booklet - Le Sueur River Watershed	As prairies were plowed precipitation followed surface water runoff paths into lakes and wetlands which were ditched and drained in many areas to remove water rapidly from the landscape thus enabling large-scale farming (MPCA, 1997).		
Science Briefing Booklet - Le Sueur River Watershed	Many researchers are attributing increased flows to three primary factors: (1) An upward trend of precipitation amounts and intensities. (2) Reduced spring evapotranspiration and increased spring runoff due to the gradual shift from perennial plant cover (prairie, pasture) and winter annuals to row crops. (3) Increasing density of tile and ditch drainage to remove water for row crop production.		
Science Briefing Booklet - Le Sueur River Watershed	Due to the historical draining of much of the areas wetlands and homgenic agricultural practices, priority is given to both wetland preservation and restoration. Wetlands that have been filed and drained retain their characteristic soil and hydrology, often allowing their natural functions to be reclaimed. Restoration is a complex process requiring planning, implementation, monitoring, and management.		

Data and Studies Avalibility

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified	Notes
Faribault County Water Plan 2018-2027	Studies, Data Acquisition, and Data Management for all Priority Concerns	yes		
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	A challenge in developing targeted and measured actions items pertaining to each of the priority concerns is a lack of high quality, scientifically vetted data.			
Waseca County Local Water Management Plan Amendment 2015-2018	Objective 1: Work to monitor and assess all County waters for determination and extent of impairments.			
Blue Earth Water Management Plan 2017-2026	Measure - Monitoring Priorities - water quality monitoring must be expanded to effectively prioritize target and measure progress in local watersheds.			
Blue Earth Water Management Plan 2017-2026	Goal: Protect the quality and quality of groundwater resources to ensure long term sustainability of groundwater supplies			well testing
Blue Earth Water Management Plan 2017-2026	Goal: Reduce nitrate nitrogen in rivers recharging surficial sands aquifers used for drinking water			nitrate monitoring
Blue Earth Water Management Plan 2017-2026	Goal: Minimize near channel erosion, erosion hazards and mitigation costs throughout the county			continue to follow studies
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Objective 3: Work in the Le Sueur River Watershed high priority areas, Madison Lake, JD 22, CD 83, CD 23, and CD 86 as defined in the Le Sueur River WRAPS report to reduce sediment from field sources, phosphorus and nitrogen		Madison Lake, JD 22, CD 83, CD 23, and CD 86	continue water monitoring, planning tools
MDA_LeSueur River 1W1P Priority Concerns	the MDA has identified townships throughout the state that are vulnerable to groundwater contamination and have significant row crop production. Blue Earth, Steel and Faribault counties participated in the TTP. Each selected township was offered testing in two steps, the 'initial' sampling and the 'follow up' sampling.			well testing
MDA_LeSueur River 1W1P Priority Concerns	Discovery Farms Minnesota (DFM) is a farmer-led effort to gather field scale water quality information from different types of farming systems in landscapes across Minnesota. The mission of the Discovery Farms program is to gather water quality information under real-world conditions. The goal is to provide practical, credible, site-specific information to enable better farm management.			
MDA_LeSueur River 1W1P Priority Concerns	The MAWQCP is a voluntary opportunity for farmers and agricultural landowners to take the lead in implementing conservation practices that protect water quality. Participants that implement and maintain approved farm management practices will be certified and in turn obtain regulatory certainty for a period of ten years. This planning program should be included in the 1W1P because it is an opportunity for agricultural producers to evaluate nutrient and field management practices within the watershed.			
MDA_LeSueur River 1W1P Priority Concerns	The MDA surveys farmers through the National Agricultural Statistics Service (NASS). A summary of the survey data is attached. The most recent nitrogen use survey was for the 2014 crop year, specifically the Irrigated and Non-Irrigated sandy soils, Northwestern, Southwestern and West Central BMP regions. The most recent pesticide use survey was from the 2015/2016 crop years. MDA can provide more detail on this if requested.			
MDA_LeSueur River 1W1P Priority Concerns	The Agricultural BMP Handbook for Minnesota is a comprehensive inventory of agricultural best management practices that address water quality impairments. The handbook is available on-line and hard copies are available upon request. State agencies and local government partners have found this a useful resource in the WRAPS and 1W1P processes.			
MDA_LeSueur River 1W1P Priority Concerns	Prioritize Protection of Private Wells	yes		well testing
MDA_LeSueur River 1W1P Priority Concerns	Prioritize areas were public and private drinking water wells are impacted by arsenic.	yes		arsenic testing
MDA_LeSueur River 1W1P Priority Concerns	Support the implementation of comprehensive source water protection plans for the public water supply system using surface water in the watershed.	yes		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Calibrate any Modeling efforts to HSPF load estimates. The LRW HSPF model has recently been recalibrated. We would recommend that any modeling efforts for implementation utilize the loading information based on the HSPF numbers and the WPLMN data to calibrate loads so that reduction calculations would be comparable to monitored loading estimates.	yes		
Bull Run Creek Subwatershed Assessment	Goal 1: Conduct water quality monitoring to assess existing conditions		Bull Run Subwatershed	
Bull Run Creek Subwatershed Assessment	Continue to use conservation targeting data to identify potential locations for water storage to reduce flooding and for opportunity areas to improve water quality		Bull Run Subwatershed	
Freeborn Lake Subwatershed Assessment	Goal 1: Support conservation targeting to reduce nutrient loads and improve water quality		Freeborn Subwatershed	
Boot Crook Subwatershed Assessment	Goal 2: Identify locally defined areas for potential water storage		Boot Creek Subwatershed	
River Park Drive Sub Watershed Assessment	Continue to support subwatershed planning and water storage targeting.			

Drainage System Management

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Faribault County Water Plan 2018-2027	Prevent additional impacts of altered hydrology through regulatory controls and better planning of drainage activities		
Faribault County Water Plan 2018-2027	Goal 1. Address impacts of altered hydrology, decreased evapotranspiration and storage due to vegetation, land use, and drainage changes		
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Drainage Concerns Goals Summary Goal #1 Maintain drainage systems while improving agricultural productivity as well as improving drainage water quality, understanding the systems are a part of a larger tributary system. Wetlands Goal #2 Preserve existing and create wetlands.	yes	
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Drainage Concerns Goals Summary Wetlands Goal #2 Preserve existing and create wetlands.	yes	
Waseca County Local Water Management Plan Amendment 2015-2018	Drainage/Wetlands Management – Agricultural drainage in Waseca County consists of a significant number of open ditches and tile drainage systems. According to the Minnesota State University's Water Resources Center's Surface Water Hydrology Atlas for Waseca County, the County has 54 public ditches: 38 are County; 3 are Joint County; and 13 are Judicial. At the time of the creation of the 1997-2007 Waseca County Water Plan, public ditches were said to extend for approximately 264 miles. Also at this time, there were 121 miles of open ditches and 143 miles of tile mains, or closed ditches. Private systems are also common throughout the County. These systems are a major component of Waseca County's water resources and as such should and do receive considerable attention by the County. Agricultural drainage systems in Waseca County date back to the early 1900's and are reaching the end of their functional life span. In many cases the systems are under designed and the cost to replace them is high. Thus, the agricultural drainage system deserves continued attention in this local water management plan amendment. A preliminary discussion has already been started regarding the possibility of conducting a thorough Drainage Management Plan to properly address the various issues. This study would also include the identification of potential wetland restorations to assist with water quality and flood control. In addition, the passage of the new buffer initiative in June of 2015 is projected to provide significant water quality improvements within drainage systems and on public waters across the state. This initiative is detailed in Chapter One, Section Three.	yes	
Waseca County Local Water Management Plan Amendment 2015-2018	Objective 1: Properly manage the County's drainage system.		
Waseca County Local Water Management Plan Amendment 2015-2018	Objective 2: Preserve and restore wetlands.		
Blue Earth Water Management Plan 2017-2026	Multipurpose Practices in Drainage Systems - increasing water storage and reducing peak flows is a priority in all drainage systems managed by 103E. There are also opportunities for water quality improvement projects in drainage system watersheds. The drainage authority will consider potential projects for wetland restoration, water quality, and flooding as required by statutes	Yes	
Blue Earth Water Management Plan 2017-2026	Wetland Protection Enhancement Restoration - wetland restoration priorities will be related to the wetlands potential to provide one of more wetland functions such as water storage, nutrient treatment, wildlife habitat, or ability to provide multiple benefits with the greatest local public value	Yes	
Blue Earth Water Management Plan 2017-2026	Goal: Drainage projects plans will identify potential wetland preservation and restoration projects, creation of water quality improvements, or flood control project to provide measurable water quality benefits in receiving waters		
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Objective 3. Work in the Le Sueur River Watershed high priority areas, Madison Lake, JD 22, CD 83, CD 23, and CD 86 as defined in the Le Sueur River WRAPS report to reduce sediment from field sources, phosphorus and nitrogen		Madison Lake, JD 22, CD 83, CD 23, and CD 86
BWSR response to Le Sueur notification	Drainage – The drainage authorities within the planning boundary should be included as stakeholders in the plan development process. Additionally, the planning partners are strongly encouraged to include projects and activities consistent with multipurpose drainage criteria outlined in Minnesota Statutes §103E.015, Subd. 1 and §103E.011, Subd. 5.	yes	
BWSR response to Le Sueur notification	Local Controls – Gaps or inconsistencies in local ordinances, policies, or enforcement could affect the success of your plan's implementation. Subsurface Sewage Treatment Systems (SSTS) compliance inspection requirements (property transfer, variance, etc.), level 3 feedlot inventories, drainage processes and proceedings, and shoreland regulations are some examples that should be explored during plan development.	yes	
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Hydrologic Conditions – Altered Hydrology The impacts of altered hydrology in this watershed are significant. Since 1990, stream channel-forming flows have almost doubled. Flooding in recent years has severely impacted the communities of St Clair, New Richland, and rural areas near Mankato. Frequent high flows and cumulative flow volume are impacting homes, roads, private property, and recreational opportunities. Changing land use and climate—such as shifts in cropping, unmitigated drainage improvements, new impervious surfaces, and higher rainfall volume and duration—have increased the volume of surface water in the Le Sueur River watershed.	yes	
Faribault County SWCD_Priority Concerns Letters	Goal 1. Address impacts of altered hydrology and drainage changes (pg.30).	yes	Bass Lake, Rice Creek
Faribault County SWCD_Priority Concerns Letters	Goal 1. Address impacts of altered hydrology and drainage changes (pg.30).	yes	
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Le Sueur River Watershed Network - Storm water management and in-ditch storage		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Staff Identified Priorities and Challenges - Faribault - drainage watershed approach using a redetermination of benefits.		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Drainage Watershed Management The MPCA encourages the planning group to discuss watershed drainage management with an emphasis on finding ways to store and/or reduce the increased volume of water based on the increase in drainage coefficient in improvement projects by working with land owners in areas where drainage improvement will eventually be considered.	yes	
Le Sueur River WRAPS Report	Some of the most recent hydrologic alterations include increases in tiled acres, tile density, precipitation, the replacement of Conservation Reserve Program (FSA 2013) land with cropped land, and increased impervious surfaces.		
Le Sueur River WRAPS Report	A substantial amount of river flow originates from tile drainage: based on Folle's analysis (2010), roughly half of the river flow originated as tile drainage.		
Le Sueur River WRAPS Report	The increase in the Le Sueur River's flow is due to hydrologic alterations made by both humans (including installing artificial drainage and changing crop types) and the climate (increased precipitation and temperatures).		
Le Sueur River WRAPS Report	Le Sueur River Watershed Network - Storm water management and in-ditch storage		
Le Sueur River Watershed Biotic Stressor Identification Report	Decreases in bank stability and altered hydrology can also lead to sediment loss from the stream banks, often caused by perturbations in the landscape such as channelization of waterways, tile drainage, riparian land cover alteration, and increases in impervious surfaces		
Boot Creek Subwatershedd Assessment	Existing conditions of CD47 and JC6 are unknown, need maintenance and updating		Boot Creek Subwatershed
Boot Creek Subwatershedd Assessment	Many questions about the existing conditions of city infrastructure and ditch maintenance routines		Boot Creek Subwatershed
Boot Creek Subwatershedd Assessment	Evaluate Existing Conditions of JC6 and CD47		Boot Creek Subwatershed
Science Briefing Booklet - Le Sueur River Watershed	Many researchers are attributing increased flows to three primary factors: (1) An upward trend of precipitation amounts and intensities. (2) Reduced spring evapotranspiration and increased spring runoff due to the gradual shift from perennial plant cover (prairie, pasture) and winter annuals to row crops. (3) Increasing density of tile and ditch drainage to remove water for row crop production. The Area's agricultural dominance, coupled with vast surface water resources has resulted in a "tug of war" between the need for cropping systems and desire for suitable water recreation. To enhance crop production, tiling systems have been improved and wetlands have been drained, causing drainage systems to be inundated with increased volumes of nutrient rich water. These fast fowing systems need to be addressed now - priority issues include potential storage areas, wetland restoration and effective management of the current drainage system program.		
Science Briefing Booklet - Le Sueur River Watershed			

Drinking Water Supply

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Blue Earth Water Management Plan 2017-2026	Goal: Protect the quality and quality of groundwater resources to ensure long term sustainability of groundwater supplies.		
MDA_LeSueur River 1W1P Priority Concerns	An important aspect to protecting citizens health is the protection of drinking water sources. MDH is the agency responsible for implementing programs under the federal Safe Drinking Water Act (SDWA).		
MDA_LeSueur River 1W1P Priority Concerns	Prioritize Drinking Water Supply Management Areas (DWSMA) in the Le Sueur River 1W1P	yes	
MDA_LeSueur River 1W1P Priority Concerns	Prioritize Protecting Noncommunity Public Water Systems	yes	
MDA_LeSueur River 1W1P Priority Concerns	Prioritize areas were public and private drinking water wells are impacted by arsenic	yes	
Le Sueur River WRAPS Report	The Le Sueur River plays an important role as a drinking water source to the city of Mankato. The city of Mankato's drinking water well extracts water from bellow the Blue Earth River, of which roughly one-third is supplied by the Le Sueur River. The primary concern of this drinking water source is nitrogen concentrations, which are dangerous to human health and expensive to treat.		
Science Briefing Booklet - Le Sueur River Watershed	Parts of the region are particularly susceptible to groundwater contamination. Ease of infiltration, aging septic systems, abandoned wells and historical tiling practices threaten public drinking water supplies. Districts promote public health, economic development and community infrastructure by insuring a potable drinking water supply for all residents.		

Protect Groundwater Resources

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority	Specific
Faribault County Water Plan 2018-2027	groundwater	yes	
Faribault County Water Plan 2018-2027	Prevent additional impacts to groundwater through land use and regulatory controls.		
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Aquifer – Groundwater Concerns Goals Summary Goal #1 Protect aquifer from contamination by water wells.	Yes	
Blue Earth Water Management Plan 2017-2026	Goal: Protect, enhance, and restore wetlands in areas to provide important water quality, wildlife, and groundwater protection functions in local watersheds.		
DWSR response to Le Sueur notification	In addition, DWSR and several other state partners have recently developed the Groundwater/Drinking Water Protection Practices for Agricultural Lands guide. This guide provides information on a range of groundwater protection practices and funding programs to support practice implementation.	yes	
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Groundwater supply and quality Groundwater is the primary source of water for rural residents, farms, livestock facilities, and communities throughout the watershed. Fresh water supplies allow us to maintain our current standard of living. Groundwater is important not only for overall water supply but also for maintaining rare wetland and spring features on the landscape.	yes	
MDA_LeSueur River 1W1P Priority Concerns	Prioritize Actions Identified in the Groundwater Restoration and Protection Strategies (GRAPS) report.	yes	

Contaiminates of Emerging Conern

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
MDA_LeSueur River 1W1P Priority Concerns	The MDA has developed and implemented a Chlorpyrifos Response Plan that details specific actions the MDA is taking related to chlorpyrifos detections in surface water including Best Management Practices (BMPs), outreach and education, as well as targeted regulatory inspections.		
Le Sueur River Watershed Monitoring and Assessment Report	Aquatic consumption impairments span the entire length of the LeSueur River main stem due to the presence of polychlorinated biphenyl (PCBs).		
Le Sueur River Watershed Biotic Stressor Identification Report	Total copper resulted in nine measurements in the Le Sueur River watershed above the standard. Copper was elevated two days in a row at station S003-860 (August 19 and 20, 2007), in the Le Sueur River. On August 22, 2007, copper was measured below the standard. T		
Le Sueur River Watershed Biotic Stressor Identification Report	Total lead resulted in seven measurements in the Le Sueur River watershed above the standard.		
Le Sueur River Watershed Biotic Stressor Identification Report	Total zinc resulted in two measurements in the Le Sueur River watershed above the standard.		
Science Briefing Booklet - Le Sueur River Watershed	Concentrations of acetochlor in the Le Sueur River and the Little Beauford Ditch have violated the MPCA Chronic Water Quality Standard for Acetochlor, resulting in their placement in 2008 on the state's 303(d) TMDL list of impaired waters.		

Chlorides

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Le Sueur River Watershed Biotic Stressor Identification Report	Ionic strength and chloride should continue to be monitored within the watershed, but there is no evidence to suggest they are stressors at this time.		

Reduce Pesticides & Fertilizer Impacts

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Le Sueur River Watershed Biotic Stressor Identification Report	There have been numerous pesticide samples taken throughout the Le Sueur River watershed. There are currently impaired waters listings for Acetochlor in the most downstream reach of the Le Sueur River and in Little Beauford Ditch.		
Le Sueur River Watershed Biotic Stressor Identification Report	Given the current gaps in understanding of the additive effects, it is difficult to rule out pesticide toxicity as a possible stressor or conclude that it may be a stressor.		

Erosion & Sediment Control

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Soil Erosion and Soil Quality Concerns Goals Summary Goal #1 Protect and preserve topsoil.	yes	
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Soil Erosion and Soil Quality Concerns Goals Summary Goal #2 Control soil erosion.	yes	
Waseca County Local Water Management Plan Amendment 2015-2018	Erosion & Runoff - Protection of agricultural soils from erosion provides for the long-term productive capability of the soil resource base of the County. Prevention of soil loss due to erosion also reduces sediment and attached phosphorous in receiving waters, helping to improve water quality. Erosion and sedimentation from runoff and stream banks are a major source of pollutants to surface waters. The Minnesota River Basin Plan and the Lower Minnesota River Dissolved Oxygen Plan have recommended increased adoption of soil erosion practices.	yes	
Waseca County Local Water Management Plan Amendment 2015-2018	Objective 4: Reduce erosion and sediment loading of surface water resources.		
Blue Earth Water Management Plan 2017-2026	Land Use Priorities - Agricultrual Land Uses - Soil Erosion - priority areas have fields used for crop production with highly erodible or potentially erodible land as described in the USDA NRCS soil survey and areas where there is soil erosion as shown using terrain analysis, local knowledge, and observed gullies in fields.	Yes	
Blue Earth Water Management Plan 2017-2026	Ravine and Near Channel Erosion - Ravines, banks, and bluffs in these areas are prone to erosion and are groupe together as "near channel erosion"	Yes	
Blue Earth Water Management Plan 2017-2026	Goal: Minimize near channel erosion, erosion hazards and mitigation costs throughout the county		
Blue Earth Water Management Plan 2017-2026	Goal: Minimize ravine and gully erosion by managing and restoring stream channels in ravine watersheds		Indian Creek watershed, thompson creek watershed, wilson creek watershed
Blue Earth Water Management Plan 2017-2026	Goal: Drainage projects plans will identify potential wetland preseration and restoration projects, creation of water quality improvements, or flood control project to provide measurable water quality benefits in receiving waters		
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Objective 1: Reduce soil erosion as defined in the high priority problems in section of this plan		
BWSR response to Le Sueur notification	Tillage & Erosion Survey Project – BWSR has been working with the University of Minnesota and other partners on a program to systematically collect data and produce county, watershed, and statewide adoption estimates of conservation measures to address erosion. The Tillage and Erosion Survey Project can provide estimates on tillage trends, cover crop adoption, and land cover for subwatersheds within the plan area. This data can be useful for establishing measurable goals related to these land management practices in the plan.	yes	
BWSR response to Le Sueur notification	Daily Erosion Project (DEP) – The DEP is a web-based application that utilizes the Water Erosion Prediction Project (WEPP) soil erosion model along with radar derived precipitation data and slope, soil, and land management information to produce daily (storm event) and annual average estimates of soil erosion and runoff at a small watershed scale. This data can enhance water quality modeling efforts and help to provide targeted BMP recommendations.	yes	
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Channel Erosion and Stability The Le Sueur River and many of its tributaries are impaired for sediment primarily from stream channels, banks, and bluffs. Rivers and streams in the watershed have more occurrences of high flows and low flows, along with changes in seasonality, and increased cumulative annual flows.	yes	
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Upland Erosion Encourage practices that minimize excessive runoff and erosion.	yes	
Faribault County SWCD_Priority Concerns Letters	Goal 2: Address water quality through soil health and BMP strategies (pg 33)	yes	Bass Lake, Rice Creek
Faribault County SWCD_Priority Concerns Letters	Goal 2: Address water quality through soil health and BMP strategies (pg 33)	yes	
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Staff Identified Priorities and Challenges - Blue Earth - lakes, urban development, bluff, ravine and field erosion, water retention and wetland restoration		
Le Sueur River WRAPS Report	This creates steep, eroding banks, bluffs, and ravines in the downstream portions of the river and a system susceptible to high erosion rates.		
Le Sueur River WRAPS Report	The watershed has geologic properties (as discussed in Section 2) that make it susceptible to high erosion; however, the altered hydrology within the watershed has exacerbated sediment loadings – unnaturally high river flows accelerate river bank/bluff erosion.		
Le Sueur River WRAPS Report	High TSS concentrations in surface runoff typically occur in high precipitation months generally in the spring/early summer (refer back to Figure 10), when there is little plant coverage of field soils. Tile drained water is generally very low in TSS; however, once it reaches a ravine or stream, this water contributes to the force that can cause ravines and river banks to erode.		
Le Sueur River Watershed Biotic Stressor Identification Report	While stream bank erosion is a natural process, acceleration of this natural process due to changes in land use and hydrology lead to a disproportionate sediment supply, stream channel instability, land loss, aquatic habitat loss, and other adverse effects (Rosgen, 2006).		
An Integrated Sediment Budget for the Le Sueur River Basin	The Le Sueur watershed is large (2,880 km2) and a prolific source of sediment.		Le Sueur River
An Integrated Sediment Budget for the Le Sueur River Basin	we have determined that long term valley excavation before the time of European settlement contributed 50,000 Mg/yr of fine-grained sediment to the mouth of the Le Sueur River. An additional 10,000 Mg/yr came from ravine excavation, with minimal sediment derived from the low-gradient uplands.		Le Sueur River
An Integrated Sediment Budget for the Le Sueur River Basin	The nearly complete transformation of the land surface, vegetation, and hydrology over the past two centuries has increased these already large sediment loadings by a factor of four to five.		Le Sueur River

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
An Integrated Sediment Budget for the Le Sueur River Basin	Current erosion from bluffs is producing the majority of the fine-grained sediment. Net contributions from the channel and floodplain adds an additional 8%, with most of that sediment coming from channel widening.		Le Sueur River
An Integrated Sediment Budget for the Le Sueur River Basin	The other main sources of sediment, ravines and uplands, contribute approximately 9% and 27% of the annual sediment load on average in the modern time period (2000-2010) (Figure ES.1).		Le Sueur River
An Integrated Sediment Budget for the Le Sueur River Basin	Although agricultural uplands account for only one quarter of the suspended sediment currently exported from the Le Sueur watershed, upland sediment represents the source which has experienced the largest percentage increase in erosion rates and is the dominant source above the incised reach.		Le Sueur River
An Integrated Sediment Budget for the Le Sueur River Basin	Because of the geologic history and setting, the near-channel areas are vulnerable to accelerated erosion, and hydrologic changes in the upper watershed have had large impacts on sediment loading.		Le Sueur River
An Integrated Sediment Budget for the Le Sueur River Basin	The contribution of ravines to the total sediment loading is smaller than bluffs due to their much smaller spatial extent. Nonetheless, some ravines can deliver sediment to the river channel at very large rates, and these sediment hot-spots can represent good initial management opportunities for sediment reduction.		Le Sueur River
An Integrated Sediment Budget for the Le Sueur River Basin	although the dominance of sediment loading from bluff and ravine erosion in the knick zone has been demonstrated, management actions require specific identification of sites for prioritized action.		Le Sueur River
An Integrated Sediment Budget for the Le Sueur River Basin	Based on stream gauging results, more sediment is delivered to the Minnesota River from its tributaries than is discharged to the Mississippi and Lake Pepin, indicating that sediment storage occurs along the Minnesota River and its wide valley bottom. I		Le Sueur River
River Park Drive Sub Watershed Assessment	Researchers from across the country have been studying the Le Sueur River for many years (Gran, 2009; Belmont, 2017; Cho, 2019) and have documented increasing river flows, more peak flows, and a more erosive river that is leading to significant bank and bluff erosion.		
River Park Drive Sub Watershed Assessment	Bank and bluff erosion has resulted in significant impact to particular landowners—including considerable property loss from farm fields to suburban backyards. There are also broader impacts to area residents due to infrastructure impacts such as road closures, culvert and bridge failures.		
River Park Drive Sub Watershed Assessment	The River Park Drive neighborhood, a subdivision within the subwatershed near Mankato, MN, has been particularly impacted (cover shot) with numerous homes that have already been condemned and removed and other structures that are currently threatened.		
Science Briefing Booklet - Le Sueur River Watershed	Excessive amounts of suspended solids from cropland, urban lands, streambanks and streambeds is a primary threat to area waters.		

Financing

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
MDA_LeSueur River 1W1P Priority Concerns	he AgDMP Loan Program is a water quality program that provides low interest loans to farmers, rural landowners, and agriculture supply businesses. The purpose is to encourage agricultural best management practices that prevent or reduce runoff from feedlots, farm fields, and other pollution problems identified by the county in local water plans.		
MDA_LeSueur River 1W1P Priority Concerns	The AGRI Livestock Investment Grant encourages long term industry development for Minnesota livestock farmers and ranchers by helping them improve, update, and modernize their livestock operation infrastructure and equipment. More information is available at www.mda.state.mn.us/livestockinvestment		
MDA_LeSueur River 1W1P Priority Concerns	The AGRI Sustainable Agriculture Demonstration Grant supports innovative on-farm research and demonstrations. It funds projects that explore sustainable agriculture practices and systems that could make farming more profitable, resource efficient, and personally satisfying. Findings are published in the MDA's annual Greenbook. More information is available at www.mda.state.mn.us/sustagdemogrant.		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Factors that may mean slower progress include limits in funding or landowner acceptance, challenging fixes (e.g., unstable bluffs and ravines, invasive species) and unfavorable climatic factors.		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	More technical and financial resources should be provided to improve SWCD operations. Limited numbers of staff and turnover is a problem due to inconsistent funding, resulting in loss of producer rapport and significant time put into training new staff.		
Waseca SWCD Priority Issues Letter	Priority efforts should include eduction, public outreach, maintaining skilled staff, mitigating altered hydrology, and providing financial assistance for projects with public benefit	yes	
Boot Creek Subwatershedd Assessment	Goal 3: Seek Funding for Engineering Feasibility Study		Boot Creek Subwatershed
Boot Creek Subwatershedd Assessment	Seek Grants and Funding		Boot Creek Subwatershed

Flooding & Floodplain

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Blue Earth Water Management Plan 2017-2026	Flooding - Flooding is of greatest concern in developed areas of county where dwellings and infrastructure are the greatest hazard	Yes	
Blue Earth Water Management Plan 2017-2026	Goal: Protect public safety and property in flood prone areas of the county		
Blue Earth Water Management Plan 2017-2026	Goal: Ensure resilience to extreme rainfall events		
Blue Earth Water Management Plan 2017-2026	Goal: Ensure community resilience with stormwater management systems that effectively provide flood water and stormwater attenuation to prevent flooding and protect water quality		
BWSR response to Le Sueur notification	Wetlands – Protection and restoration of wetlands provides benefits for water quality, flood damage reduction, and wildlife habitat. The plan should support the continued implementation of the Wetland Conservation Act and look for opportunities to improve coordination across jurisdictional boundaries. The plan should also identify high priority areas for wetland restoration and strategically target restoration projects to those areas. The Restorable Wetland Prioritization Tool is an example resource that can be used to help identify such areas. Minnesota is embarking on a new wetland prioritization plan that will guide wetland mitigation in the future. Wetland restoration and preservation priorities in this watershed plan may be eligible for inclusion in the prioritization plan in the future.	yes	
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Hydrologic Conditions – Altered Hydrology The impacts of altered hydrology in this watershed are significant. Since 1990, stream channel-forming flows have almost doubled. Flooding in recent years has severely impacted the communities of St Clair, New Richland, and rural areas near Mankato. Frequent high flows and cumulative flow volume are impacting homes, roads, private property, and recreational opportunities. Changing land use and climate—such as shifts in cropping, unmitigated drainage improvements, new impervious surfaces, and higher rainfall volume and duration—have increased the volume of surface water in the Le Sueur River watershed	yes	
Bull Run Creek Subwatershed Assessment	Studies have documented flooding, tree snags, collapsing streambanks and bluffs and high levels of sediment, nutrients, and bacteria.		
Bull Run Creek Subwatershed Assessment	Numerous residents expressed a need to address flooding and pollutant load issues in the Bull Run Creek subwatershed.		Bull Run Subwatershed
Bull Run Creek Subwatershed Assessment	Goal 3: Identify Potential Locations for Water Storage to Reduce Flooding		Bull Run Subwatershed
Boot Creek Subwatershedd Assessment	The community of New Richland has been experiencing record precipitation events and significant flooding problems over the past few years. The community has suffered from numerous devastating flooding events. Community members were motivated to come together to seek solutions to the flooding problem.		New Richland
Boot Creek Subwatershedd Assessment	The deluge of water overpowered roadways, storm drains, sanitary sewers, lift stations, wells, and residential sump pumps. Much of the flooding occurred far from rivers, streams, and ditches. The rains fell and simply had nowhere to drain. The water flowed into many homes, businesses and public facilities. This is the fourth recent major flood to strike this part of the state, following disasters in 2010, 2013 and 2014.		New Richland
Boot Creek Subwatershedd Assessment	Increased flooding frequency throughout the City of New Richland		New Richland
Boot Creek Subwatershedd Assessment	Community members and businesses experiencing substantial property damage		New Richland
Boot Creek Subwatershedd Assessment	Goal 1: Host Community Conversations to discuss strategies to reduce flooding		Boot Creek Subwatershed

Public Safety

Draft Issue Statement

RESPONSE LETTERS WATER PLANS REPORTS PUBLIC COMMENTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Blue Earth Water Management Plan 2017-2026	Goal: Protect public safety and property in flood prone areas of the county		

Groundwater Quality

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Faribault County Water Plan 2018-2027	Goal 1. Address the quality and quantity of groundwater to ensure sustainability for future generations.		
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Waste Disposal and Management Concerns Goals Summary (SSTS) Goal #1 Protect surface water and ground water from subsurface sewage treatment system (SSTS) contamination.	yes	
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Waste Disposal and Management Concerns Goals Summary (Feedlots) Goal #2 Protect surface water and groundwater resources from feedlot/ animal waste contamination.	yes	
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Goal #4 Protect surface water and ground water from mixed solid waste contamination.	yes	
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Goal #5 Protect surface water and ground water from hazardous waste pollution.	yes	
Blue Earth Water Management Plan 2017-2026	Goal: Protect the quality and quality of groundwater resources to ensure long term sustainability of groundwater supplies		
Blue Earth Water Management Plan 2017-2026	Goal: Reduce nitrate nitrogen in rivers recharging surficial sands aquifers used for drinking water		
MDA_LeSueur River 1W1P Priority Concerns	Nitrate and pesticides in surface and groundwater are the priority resource concerns for the MDA statewide. Priority concerns specific to the Le Sueur River watershed relate to nitrate and pesticides in surface water. According to the Minnesota Pollution Control Agency (MPCA), Pollutant Load Monitoring Network program, the Le Sueur Watershed is the highest nitrate-nitrogen yielding major watershed of the 51 monitored in Minnesota. In addition, Beautord Ditch (located 10 miles south of Mankato) is currently listed as impaired for the insecticide chlorpyrifos (2018).	yes	
MDA_LeSueur River 1W1P Priority Concerns	Prioritize Sealing Abandoned Wells	yes	
MDA_LeSueur River 1W1P Priority Concerns	Prioritize Protection of Private Wells	yes	
MDA_LeSueur River 1W1P Priority Concerns	Prioritize areas were public and private drinking water wells are impacted by arsenic.	yes	
Le Sueur River WRAPS Report	The Le Sueur River plays an important role as a drinking water source to the city of Mankato. The city of Mankato's drinking water well extracts water from bellow the Blue Earth River, of which roughly one-third is supplied by the Le Sueur River. The primary concern of this drinking water source is nitrogen concentrations, which are dangerous to human health and expensive to treat		
Le Sueur River Watershed Monitoring and Assessment Report	Nitrates are the most common groundwater contaminant in the watershed.		

Groundwater Quality

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Faribault County Water Plan 2018-2027	Goal 1. Address the quality and quantity of groundwater to ensure sustainability for future generations.		
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Aquifer - Groundwater Concerns Goals Summary Goal #2 Protect Groundwater from Depletion and Degradation.	Yes	
Blue Earth Water Management Plan 2017-2026	Goal: Protect the quality and quality of groundwater resources to ensure long term sustainability of groundwater supplies		
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Groundwater supply and quality Groundwater is the primary source of water for rural residents, farms, livestock facilities, and communities throughout the watershed. Fresh water supplies allow us to maintain our currentstandard of living. Groundwater is important not only for overall water supply but also for maintaining rare wetland and spring features on the landscape.	yes	
Le Sueur River WRAPS Report	Base flow is sustained by shallow groundwater and interflow. Simply put, low base flow is indicative of soils being too dry and water tables being too low – partly the result of draining excess water from the landscape. Therefore, these sources are unable to deliver ample water to rivers at drytimes of year, when base flow is the only source of river flow.		

Infiltration & Recharge

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Blue Earth Water Management Plan 2017-2026	Goal: Reduce nitrate nitrogen in rivers recharging surficial sands aquifers used for drinking water		
Blue Earth Water Management Plan 2017-2026	Goal: Recharge buried sands and bedrock aquifers		
Le Sueur River Watershed Biotic Stressor Identification Report	Flow alteration results in increased flows, change in duration of flows, flashiness, decreased baseflow, loss of groundwater recharge, changes in floodplain connection, changes to habitat, and changes in timing of flows. Flow alteration can be devastating to a biological community.		

Invasive Species

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Surface Water Concerns Goals Summary (Watershed/Impairment) Goal #9 Support Aquatic Invasive Species (AIS) prevention programs.	yes	
Blue Earth Water Management Plan 2017-2026	Goal: Help prevent the spread of aquatic invasive species throughout the region and Minnesota		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Factors that may mean slower progress include limits in funding or landowner acceptance, challenging fixes (e.g., unstable bluffs and ravines, invasive species) and unfavorable climatic factors.		
Le Sueur River Watershed TMDL	Over abundance of aquatic plants can limit recreation activities and invasive aquatic species such as curly-leaf pondweed can change the dynamics of internal P loading		Madison, Elysian, Eagle, Freeborn

Policy and Regulation (or Landuse Management)

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified	Notes
Faribault County Water Plan 2018-2027	Regulatory Controls for all Priority Concerns	yes		
Faribault County Water Plan 2018-2027	Prevent additional impacts of altered hydrology through regulatory controls and better planning of drainage activities			
Faribault County Water Plan 2018-2027	Prevent additional impacts to surface waters through better land use and regulatory controls.			
Faribault County Water Plan 2018-2027	Prevent additional impacts to groundwater through land use and regulatory controls.			
Faribault County Water Plan 2018-2027	Stay consistent with state regulation and make appropriate modifications to permits and ordinances.			
Waseca County Local Water Management Plan Amendment 2015-2018	The Comprehensive Land Use Plan complements the Local Water Management Plan by identifying and protecting Natural Resources Corridors, Rural Open Space, and Shoreland Developments			
Waseca County Local Water Management Plan Amendment 2015-2018	Maximize Existing Laws and Regulations			
Blue Earth Water Management Plan 2017-2026	Goal: Protect the quality and quality of groundwater resources to ensure long term sustainability of groundwater supplies			
Blue Earth Water Management Plan 2017-2026	Goal: Minimize near channel erosion, erosion hazards and mitigation costs throughout the county			Land use strategies
Blue Earth Water Management Plan 2017-2026	Goal: Ensure community resilience with stormwater management systems that effectively provide flood water and stormwater attenuation to prevent flooding and protect water quality			
Blue Earth Water Management Plan 2017-2026	Goal: Ensure all subsurface sewage treatment systems (SSTS) are in compliance with Blue Earth County Code			land use permits and land use
Blue Earth Water Management Plan 2017-2026	Goal: Manage septage to reduce potential contamination of surface and groundwater resources			
Blue Earth Water Management Plan 2017-2026	Goal: Protect, enhance, and restore wetlands in areas to provide important water quality, wildlife, and groundwater protection functions in local watersheds			WCA
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Objective 5: Increase habitat and plant diversity in areas that will have multiple benefits including erosion control, water quality filtering, wetland establishment, and general habitat improvement for wildlife and pollinators			develop easements
BWSR response to Le Sueur notification	Conservation Easements – The State's Re-Invest in Minnesota (RIM) Reserve easement program and the Conservation Reserve Enhancement Program (CREP), in partnership with the United States Department of Agriculture (USDA), considers several site specific and landscape scale factors when funding applications. Though it is dependent on specific program terms, the State considers local prioritization of areas for easement enrollment. The plan should consider areas with a higher risk of contributing to surface and subsurface water degradation, such as highly erosive lands and wellhead protection areas, that would benefit from being placed under permanent vegetative cover. Another factor to consider are he acres of Conservation Reserve Program (CRP) that are scheduled to expire within the watershed. The plan should recognize the potential impact these expiring contracts may have in the planning area and consider prioritizing working with producers regarding the management of those acres.	yes		
BWSR response to Le Sueur notification	Local Controls – Gaps or inconsistencies in local ordinances, policies, or enforcement could affect the success of your plan's implementation. Subsurface Sewage Treatment Systems (SSTS) compliance inspection requirements (property transfer, variance, etc.), level 3 feedlot inventories, drainage processes and proceedings, and shoreland regulations are some examples that should be explored during plan development	yes		
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Land Use Impacting Terrestrial and Aquatic Habitat Utilize land use tools, such as a zoning codes and ordinances, to address new challenges that negatively impact our ecosystems and confine surface water hydrology	yes		
MDA_LeSueur River 1W1P Priority Concerns	Agricultural Land Preservation Program The MDA assists local government in protection of farmland through its Agricultural Land Preservation Program. This includes online tools and programmatic support. More information is available at https://www.mda.state.mn.us/environment-sustainability/farmland-protection			
MDA_LeSueur River 1W1P Priority Concerns	Prioritize Protection of Private Wells	yes		land use management and ordinace development
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Staff-Identified Priorities and Challenges - Waseca - demonstration sites including: wetlands, floodplain easements, and stream restoration sites			
Le Sueur River WRAPS Report	Some of the most recent hydrologic alterations include increases in tiled acres, tile density, precipitation, the replacement of Conservation Reserve Program (FSA 2013) land with cropped land, and increased impervious surfaces.			
Le Sueur River Watershed Monitoring and Assessment Report	Since European settlement in the 1860s the LeSueur has undergone considerable land use modification, including the plowing of its native prairies, harvesting of its hardwood forests, draining of its wetlands and modifications to its natural stream courses.			
River Park Drive Sub Watershed Assessment	Goal 2: Raise awareness about the need for water storage with policy makers			
River Park Drive Sub Watershed Assessment	Continue to raise awareness with policy makers about the need for water storage and advocate for policy development and funding			

Preserve Prime Farmland

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified	Notes
Blue Earth Water Management Plan 2017-2026	Greenprint Shorlands			

Protect Groundwater Resources

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Faribault County Water Plan 2018-2027	groundwater	yes	
Faribault County Water Plan 2018-2027	Prevent additional impacts to groundwater through land use and regulatory controls.		
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Aquifer – Groundwater Concerns Goals Summary Goal #1 Protect aquifer from contamination by water wells.	Yes	
Blue Earth Water Management Plan 2017-2026	Goal: Protect, enhance, and restore wetlands in areas to provide important water quality, wildlife, and groundwater protection functions in local watersheds		
BWSR response to Le Sueur notification	In addition, BWSR and several other state partners have recently developed the Groundwater/Drinking Water Protection Practices for Agricultural Lands guide. This guide provides information on a range of groundwater protection practices and funding programs to support practice implementation.	yes	
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Groundwater supply and quality Groundwater is the primary source of water for rural residents, farms, livestock facilities, and communities throughout the watershed. Fresh water supplies allow us to maintain our currentstandard of living. Groundwater is important not only for overall water supply but also for maintaining rare wetland and spring features on the landscape.	yes	
MDA_LeSueur River 1W1P Priority Concerns	Prioritize Actions Identified in the Groundwater Restoration and Protection Strategies (GRAPS) report.	yes	

Protect Soil Health

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Soil Health -		
BWSR response to Le Sueur notification	Soil Health – The majority of the land use in the Le Sueur River watershed planning area is agriculture. The concept, and the associated practices, of soil health have the potential to positively change the interaction of agriculture and the natural system at the soil level. Common soil health practices include the use of strip-till / no-till, the use of cover crops, increased areas of continuous living cover, and extended crop rotations. Improving soil health can help decrease soil erosion, increase water infiltration, provide nutrient scavenging, and increase soil organic matter. In addition, at this time, there seems to be increased interest from landowners and operators about soil health. It is recommended that these soil health practices be prioritized for implementation in the plan. Additional information can be found on BWSR's Soils and Soil Health webpage and the Minnesota Office for Soil Health (MOSH) website.	yes	
Faribault County SWCD_Priority Concerns Letters	Goal 2: Address water quality through soil health and BMP strategies (pg 33)	yes	Bass Lake, Rice Creek
Faribault County SWCD_Priority Concerns Letters	Goal 2: Address water quality through soil health and BMP strategies (pg 33)	yes	
Waseca SWCD_Priority Issues Letter	Priority Practices should include soil health, wetland restorations, stabilizing concentrated flow erosion, snag removal from the Le Sueur River channel, water storage, and perennial cover.	yes	
Bull Run Creek Subwatershed Assessment	Continue to promote soil health and cover crop experimentation in the subwatershed		Bull Run Subwatershed
Freeborn Lake Subwatershed Assessment	Desired Outcomes: Improve the health of the Freeborn Lake Watershed by reducing nutrient inputs, improving soil health and increasing water storage and perennial vegetation on the landscape. Soil and water conservation practices, protecting and restoring critical habitats, and local partnerships are essential components to enhance water quality and improve fish and wildlife habitats.		Freeborn Subwatershed
Freeborn Lake Subwatershed Assessment	Support increased cover crop adoption with the Freeborn Soil Health Team		Freeborn Subwatershed

Protect Surface Water Resources

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Surface Water Concerns Goals Summary (Watershed/Impairment) Goal #7: Protect and preserve existing shorelands. (Aquatic Invasive Species)	yes	
BWSR response to Le Sueur notification	Although much of the assessed surface waters are impaired and a focus will naturally be on restoration practices, some assessed waters meet requirements and should be considered for protection practices.	yes	
Waseca SWCD_Priority Issues Letter	Local Priorities - St Olaf Lake	yes	St Olaf Lake
Le Sueur River WRAPS Report	Water bodies that meet water quality standards should be protected to maintain or improve water quality. Furthermore, water bodies that have not been assessed should not be allowed to degrade. Three water bodies were assessed as supporting water quality standards: one reach of the Cobb River, Reeds Lake, and St. Olaf Lake		one reach of the Cobb River, Reeds Lake, and St. Olaf Lake
Assessment Report of Selected Lakes Within the Le Sueur River Watershed Minnesota River Basin	Two lakes (St. Olaf and Reeds) within the watershed have been determined to be fully supporting of recreational use.		

Public Outreach

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Faribault County Water Plan 2018-2027	Information Sharing, Education, and Outreach for all Priority Concerns	yes	
Waseca County Local Water Management Plan Amendment 2015-2018	Public Education - Water plans have traditionally focused on providing education on a number of key water-related issues. Waseca County is committed to continuing this tradition, by focusing their educational efforts on the County's priority water-planning issues. In addition, a number of the miscellaneous issues, such as the importance of protecting groundwater, will be considered in the County's educational efforts. This priority issue will also be a way for the County to cooperate with a number of the key water-planning stakeholders.	yes	
Waseca County Local Water Management Plan Amendment 2015-2018	Objective 1: Expand the public's knowledge and understanding of important water issues and resources.		
Blue Earth Water Management Plan 2017-2026	Goal: Increase Adoption of voluntary best management practices to protect and improve soil health and water quality		
Blue Earth Water Management Plan 2017-2026	Goal: Minimize near channel erosion, erosion hazards and mitigation costs throughout the county		
Blue Earth Water Management Plan 2017-2026	Goal: Ensure community resiliene with stormwater management systems that effectively provide flood water and stormwater attenuation to prevent flooding and protect water quality		
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Objective 3: Work in the Le Sueur River Watershed high priority areas, Madison Lake, JD 22, CD 83, CD 23, and CD 86 as defined in the Le Sueur River WRAPS report to reduce sediment from field sources, phosphorus and nitrogen		Madison Lake, JD 22, CD 83, CD 23, and CD 86
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Objective 5: Increase habitat and plant diversity in areas that will have multiple benefits including erosion control, water quality filtering, wetland establishment, and general habitat improvement for wildlife and pollinators		
MDA_LeSueur River 1W1P Priority Concerns	The MDA is interested in working with local and state partners to engage the agricultural community, support on-farm demonstrations, promote the Minnesota Ag Water Quality Certification Program, and use the most recent and relevant research and tools to share information about conservation practices.	yes	
MDA_LeSueur River 1W1P Priority Concerns	the MDA has identified townships throughout the state that are vulnerable to groundwater contamination and have significant row crop production. Blue Earth, Steel and Faribault counties participated in the TTP. Each selected township was offered testing in two steps, the 'initial' sampling and the 'follow-up' sampling		
MDA_LeSueur River 1W1P Priority Concerns	The Nutrient Management Initiative NMI assists crop advisers and farmers in evaluating nutrient management practices on their own fields using on-farm trials. This is a great opportunity to promote new strategies that are available that could improve fertilizer use efficiency and help open the door to include local cooperators in the water quality discussion.		
MDA_LeSueur River 1W1P Priority Concerns	Prioritize Protection of Private Wells	yes	
MDA_LeSueur River 1W1P Priority Concerns	Prioritize areas were public and private drinking water wells are impacted by arsenic.	yes	
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Civic engagement and public participation was a major focus during the LRW project. The purpose of this project was to identify community/landowner opportunities, obstacles, and opinions on land management and water quality in the rural portion of the watershed. Ultimately, this work helped identify land management options for the purposes of surface water quality restoration and protection within the LRW. The list below summarizes the efforts taken by county, SWCD and other state agency staff to promote civic engagement and collaboration in the area.		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Le Sueur River Watershed Network - Experimentation and demonstration with temporary water storage		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Le Sueur River Watershed Network - Communication and education for watershed residents		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Staff-Identified Priorities and Challenges - Waseca - demonstration sites including: wetlands, floodplain easements, and stream restoration sites		
Waseca SWCD_Priority Issues Letter	Priority efforts should include eduction, public outreach, maintaining skilled staff, mitigating altered hydrology, and providing financial assistance for projects with public benefit	yes	
Le Sueur River WRAPS Report	Le Sueur River Watershed Network - Experimentation and demonstration with temporary water storage		
Le Sueur River WRAPS Report	Le Sueur River Watershed Network - Communication and education for watershed residents		
Bull Run Creek Subwatershed Assessment	Goal 2: Raise awareness about the need for water storage with subwatershed residents		Bull Run Subwatershed
Bull Run Creek Subwatershed Assessment	Support outreach and education about water quality monitoring results, subwatershed and ditch issues		Bull Run Subwatershed
Bull Run Creek Subwatershed Assessment	Create opportunities for farmer-to-farmer learning		Bull Run Subwatershed
Farm America Subwatershed Assessment	More experimentation and demonstration with temporary water storage		Farm America Subwatershed
Farm America Subwatershed Assessment	Goal 2: Create informational panels for Farm America so visitors can better understand their watershed connection to the Le Sueur River Watershed and downstream		Farm America Subwatershed
Freeborn Lake Subwatershed Assessment	Targeted outreach to upstream landowners		Freeborn Subwatershed
Freeborn Lake Subwatershed Assessment	Continue to raise awareness about lake water quality and health		Freeborn Subwatershed
Boot Creek Subwatershedd Assessment	Goal 1: Host Community Conversations to discuss strategies to reduce flooding		Boot Creek Subwatershed
Boot Creek Subwatershedd Assessment	Continue and Expand Community Conversations		Boot Creek Subwatershed
Boot Creek Subwatershedd Assessment	Communication Strategy		Boot Creek Subwatershed
Boot Creek Subwatershedd Assessment	Form an Advisory Board		Boot Creek Subwatershed

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
River Park Drive Sub Watershed Assessment	Goal 1: Raise awareness about Le Sueur River Watershed issues with the general public		
River Park Drive Sub Watershed Assessment	Continue to raise awareness about Le Sueur Watershed issues with the general public		
River Park Drive Sub Watershed Assessment	Build a coalition of citizens		

Stakeholder Involevement

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Factors that may mean slower progress include limits in funding or landowner acceptance, challenging fixes (e.g., unstable bluffs and ravines, invasive species) and unfavorable climatic factors.		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Civic engagement and public participation was a major focus during the LRW project. The purpose of this project was to identify community/landowner opportunities, obstacles, and opinions on land management and water quality in the rural portion of the watershed. Ultimately, this work helped identify land management options for the purposes of surface water quality restoration and protection within the LRW. The list below summarizes the efforts taken by county, SWCD and other state agency staff to promote civic engagement and collaboration in the area.		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Resident and Farmer Interviews		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Utilize the Le Sueur Network The LRW Network group has been meeting for a number of years to discuss water quality and quantity issues within the watershed. They have developed priority issues and areas that MPCA recommends are considered in the 1W1P process. Members of the group are willing to participate in the planning process.	yes	
Le Sueur River WRAPS Report	However, civic engagement work illustrates that there are current limitations in BMP adoption and some technologies are not yet feasible.		
Le Sueur River WRAPS Report	Resident and Farmer Interviews		

Stormwater Management

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Faribault County Water Plan 2018-2027	Prevent additional impacts of urban areas and impervious surfaces through regulatory controls and better planning of stormwater management		
Waseca County Local Water Management Plan Amendment 2015-2018	Stormwater Management - Stormwater is the water that flows over the land after a rain event or snowmelt. It comes with it pollutants such as sediment, phosphorus, coliform bacteria, oils, toxins, and debris. Surficial interactions also result in increased water temperatures. When natural areas are developed, the amount of impervious land surface increases, in turn increasing the volume and velocity of stormwater. This polluted stormwater discharges into streams and lakes. Lowering stormwater volumes and velocity, as well as hindering temperature increases of waters in which it comes in contact with, helps maintain the health of County waters and biological communities within.	yes	
Waseca County Local Water Management Plan Amendment 2015-2018	Objective 5: Properly manage stormwater runoff		
Blue Earth Water Management Plan 2017-2026	Land Use Priorities - developed land use - stormwater management - priorities for stormwater management are areas with high density development in sensitive areas such as lake shoreland and steep slopes near ravines and in river corridors	Yes	
Blue Earth Water Management Plan 2017-2026	Goal: Ensure community resilience with stormwater management systems that effectively provide flood water and stormwater attenuation to prevent flooding and protect water quality		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Le Sueur River Watershed Network - Storm water management and in-ditch storage		
Le Sueur River WRAPS Report	Le Sueur River Watershed Network - Storm water management and in-ditch storage		
Le Sueur River Watershed TMDL	Urban and suburban stormwater runoff, both from developing and built-out areas, carries pollutant loads that can match or exceed agricultural run-off on a per-acre basis. This runoff also contributes to channel instability and streambank erosion		Le Sueur River
Le Sueur River Watershed TMDL	Pollutants from stormwater runoff can include pesticides, fertilizer, oil, metals, pathogens, salt, sediment, litter and other debris.		Le Sueur River
Le Sueur River Watershed TMDL	Industrial sites might contribute to stormwater pollution when water comes in contact with pollutants such as toxic metals, oil, grease, de-icing salts and other chemicals from rooftops, roads, parking lots and from activities such as storage and material handling.		Le Sueur River
Doot Creek Subwatershedd Assessment	Many questions about the existing conditions of city infrastructure and ditch maintenance routines		Boot Creek Subwatershed
Science Briefing Booklet - Le Sueur River Watershed	Local districts recognize that stormwater runoff volume from impervious surfaces will likely increase as development of the watershed continues. New developments located adjacent to existing cities, near lakeshore or simply placed in a rural setting need to be tightly regulated to prevent the associated nutrient and sediment runoff impacts to our water resources.		

Surface Water Quality

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified	Notes
Faribault County Water Plan 2018-2027	sediment and nutrient transport	yes		
Faribault County Water Plan 2018-2027	surface water quantity and quality	yes		
Faribault County Water Plan 2018-2027	Protect and restore the quality and manage the quantity of surface water.	yes		
Faribault County Water Plan 2018-2027	Goal 2. Address the quality of surface water through strategies to conserve and manage soil health, strategies to reduce, trap, or treat nutrients and sediment, and information sharing on sustainable farming options.			
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Surface Water Concerns Goals Summary (Watershed/Impairment) Goal #1 Address impaired and unimpaired surface waters.	yes		
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Surface Water Concerns Goals Summary (Watershed/Impairment) Goal #2 Manage watersheds to reduce bacteria, nutrients, chemicals, and sediments from entering surface waters.	yes		
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Surface Water Concerns Goals Summary (Watershed/Impairment) Goal #5 Improve water quality of lakes.	yes		
Waseca County Local Water Management Plan Amendment 2015-2018	1. Reducing Priority Pollutants a. Total Maximum Daily Loads (TMDLs) – A TMDL, or Total Maximum Daily Load, is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. When a waterbody cannot sustain a number of identified pollutants, it is placed on the Minnesota Pollution Control Agency's TMDL list of impaired waters. The 2012 list of Impaired Waters in Waseca County is found in Chapter One. The County would simply like to work with the various water-resource partners on getting these waters off the TMDL listing. The MPCA generates the 303d list and is responsible for TMDL development.	yes	Clear Lake and Gaiter Lake Diversion Project. Loon Lake, Lake Elysian, Cobb River, Crane Creek	
Waseca County Local Water Management Plan Amendment 2015-2018	Erosion & Runoff - Protection of agricultural soils from erosion provides for the long-term productive capability of the soil resource base of the County. Prevention of soil loss due to erosion also reduces sediment and attached phosphorous in receiving waters, helping to improve water quality. Erosion and sedimentation from runoff and stream banks are a major source of pollutants to surface waters. The Minnesota River Basin Plan and the Lower Minnesota River Dissolved Oxygen Plan have recommended increased adoption of soil erosion practices.	yes		
Blue Earth Water Management Plan 2017-2026	Land Use Priorities - developed land use - shorelands - shoreland areas are a priority for protecting critical habitat and water quality as phosphorus runoff from developed land in shoreland is typically higher on a per-acre basis compared with other landuses	Yes		Shorelands
Blue Earth Water Management Plan 2017-2026	Land Use Priorities - Agricultrual Land Uses - Soil Erosion - priority areas have fields used for crop production with highly erodible or porentially erodible land as described in the USDA NRCS soil survey and areas where there is soil erosion as shown using terrain analysis, local knowledge, and observed gullies in fields.	Yes		
Blue Earth Water Management Plan 2017-2026	Land Use Priorities - Agricultrual Land Uses - Nitrogen - priority areas for nitrogen reduction are tile drained and coarse textrued soils used for crop production. Priority watersheds are the watersheds in the greater blue earth river watershed and the middle minnesota river watershed	Yes		Nitrogen
Blue Earth Water Management Plan 2017-2026	Land Use Priorities - Agricultrual Land Uses - Phosphorus - Reducing phosphorus is priority in lake watersheds. Lake crystal, madison lake, lake ballantyne and duck lake will be the highest priority lake watersheds during the ten - year planning period. Additional lake priorities may be determined with a lake assessment in partnership with the MNDNR and with recommendations from the water plan task force.	Yes	Lake crystal, madison lake, lake ballantyne and duck lake	Phosphorus
Blue Earth Water Management Plan 2017-2026	Wetland Protection Enhancement Restoration - wetland restoration priorities will be related to the wetlands potential to provide one of more wetland functions such as water storage, nutrient treatment, wildlife habitat, or ability to provide multiple benefits with the greatest local public value	Yes		
Blue Earth Water Management Plan 2017-2026	Goal: Increase Adoption of voluntary best management practices to protect and improve soil health and water quality			nitorgen management, soil erosion, phosphorus
Blue Earth Water Management Plan 2017-2026	Goal: Drainage projects plans will identify potential wetland preseration and restoration projects, creation of water quality improvements, or flood control project to provide measurable water quality benefits in receiving waters			
Blue Earth Water Management Plan 2017-2026	Goal: Ensure community resilience with stormwater management systems that effectively provide flood water and stormwater attenuation to prevent flooding and protect water quality			Erosion control strategies, stormwater management approaches including green infrastructure, constructed wetlands and water quality
Blue Earth Water Management Plan 2017-2026	Goal: Protect, enhance, and restore wetlands in areas to provide important water quality, wildlife, and groundwater protection functions in local watersheds			

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified	Notes
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Nitrogen - reducing nitrogen loss in the agicultural setting will involve utilizing the Minnesota Nutrient Reduction Strategy, Minnesota Fertilizer Management plan, Nitrogen in Minnesota Surface Waters, MPCA Watershed Restoration and Protection Strategies, University of Minnesota Nitrogen Best Mangement Practices for Nitrogen, NRCS field office technical guide, and other nitrogen recommendation reports and guidlines as needed.	Yes		
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Phosphorus - Reducing phosphorus loss from agricultural land sources is mainly addressed through erosion and water storage BMPs suggested by the Minnesota Nutrient Reduction Strategy, MPCA Watershed Restroation and protection strategies, NRCS field office technial guide and other innovative designs as needed.			
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Sodimnt - Sediment and phosphorus tend to be directly coorolated since phosphous is typically transported while attached to soil particles. BMPs to treat these issues are dicussed in detail in the MPCA Sediment Reduction Strategy for Minnesota River Basin, minnesota Nutrient Reduction Strategy, MPCA Watershed restoration and protection strategies, and NRCS field office technical guide and other innovative designs as needed.			
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Objective 1: Reduce soil erosion as defined in the high priority problems in section of this plan			
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Objective 3: Work in the Le Sueur River Watershed high priority areas, Madison Lake, JD 22, CD 83, CD 23, and CD 86 as defined in the Le Sueur River WRAPS report to reduce sediment from field sources, phosphorus and nitrogen		Madison Lake, JD 22, CD 83, CD 23, and CD 86	
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Objective 5: Increase habitat and plant diversity in areas that will have multiple benefits including erosion control, water quality filtering, wetland establishment, and general habitat improvement for wildlife and pollinators.			
BWSR response to Le Sueur notification	WRAPS – The cycle one Watershed Restoration and Protection Strategies (WRAPS) Report for the Le Sueur River watershed identified altered hydrology (particularly base flow and peak flow), elevated sediment and total suspended solids (TSS) concentrations, elevated nitrogen concentrations, elevated phosphorus concentrations, elevated E. coli / Fecal Coliform concentrations, low dissolved oxygen, and poor habitat as the primary pollutant sources and/or stressors.	yes		
BWSR response to Le Sueur notification	Wetlands – Protection and restoration of wetlands provides benefits for water quality, flood damage reduction, and wildlife habitat. The plan should support the continued implementation of the Wetland Conservation Act and look for opportunities to improve coordination across jurisdictional boundaries. The plan should also identify high priority areas for wetland restoration and strategically target restoration projects to those areas. The Restorable Wetland Prioritization Tool is an example resource that can be used to help identify such areas. Minnesota is embarking on a new wetland prioritization plan that will guide wetland mitigation in the future. Wetland restoration and preservation priorities in this watershed plan may be eligible for inclusion in the prioritization plan in the future.	yes		
BWSR response to Le Sueur notification	Urban Stormwater - Urban stormwater runoff frequently contains pollutants such as pesticides, fertilizers, sediment, salt, and other debris, which can contribute to excess algae growth and poor water clarity/quality in our water resources. Poorly managed urban stormwater can also drastically alter the natural flow and infiltration of water, scour stream banks, and harm or eliminate aquatic organisms and ecosystems. Any cities with Municipal Separate Storm Sewer System (MS4) General Permits should be engaged throughout the planning process to ensure that their Stormwater Pollution Prevention Programs are incorporated into the plan. Smaller municipalities throughout the plan area should also be engaged in the process as they likely have fewer financial and technical resources to address stormwater issues.	yes		
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Channel Erosion and Stability The Le Sueur River and many of its tributaries are impaired for sediment primarily from stream channels, banks, and bluffs. Rivers and streams in the watershed have more occurrences of high flows and low flows, along with changes in seasonality, and increased cumulative annual flows.	yes		
FaribaultCounty.SWCD_Priority Concerns Letters	Goal 2: Address water quality through soil health and BMP strategies (pg 33)	yes	Bass Lake, Rice Creek	
FaribaultCounty1W1PPrioritylssuesSigned 20210505	Goal 2: Address water quality through soil health and BMP strategies (pg 33)	yes		
MDA_LeSueur River 1W1P Priority Concerns	Nitrate and pesticides in surface and groundwater are the priority resource concerns for the MDA statewide. Priority concerns specific to the Le Sueur River watershed relate to nitrate and pesticides in surface water. According to the Minnesota Pollution Control Agency (MPCA), Pollutant Load Monitoring Network program, the Le Sueur Watershed is the highest nitrate-nitrogen yielding major watershed of the 51 monitored in Minnesota. In addition, Beauford Ditch (located 10 miles south of Mankato) is currently listed as impaired for the insecticide chlorpyrifos (2018).	yes		Nitrate and pesticides
MDA_LeSueur River 1W1P Priority Concerns	Support the implementation of comprehensive source water protection plans for the public water supply system using surface water in the watershed	yes		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Within the LRW, there are currently 109 impairments on the 2020 impaired waters list. Table 1 summarizes the listings by impairment type. Full details on the impairment listings can be found here:			
MPCA Priority Issues Le Sueur 1W1P 2021-2031	While the SID process still needs to be completed for the deferred streams, impaired reaches in the 2014 report show primary stressors including, Dissolved Oxygen, Nitrate, Phosphorous, Turbidity/TSS, Habitat, Connectivity and Altered Hydrology.			
MPCA Priority Issues Le Sueur 1W1P 2021-2031	priority areas - Impaired streams and lakes (subwatersheds) including the type and number of associated impairment parameters and stressors			
MPCA Priority Issues Le Sueur 1W1P 2021-2031	priority areas - Lake subwatersheds with declining trends			
MPCA Priority Issues Le Sueur 1W1P 2021-2031	priority areas - High loading HSPF-modeled subwatersheds			

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified	Notes
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Le Sueur River Watershed Network - Strategically placed buffers, terraces, and grassed waterways			
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Le Sueur River Watershed Network - River channel maintenance of major snags			
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Le Sueur River Watershed Network - Streambank and ravine stabilization			
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Staff-identified Priorities and Challenges - Blue Earth - lakes, urban development, bluff, ravine and field erosion, water retention and wetland restoration			
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Staff-identified Priorities and Challenges - Waseca - demonstration sites including: wetlands, floodplain easements, and stream restorgtion sites			
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Staff-identified Priorities and Challenges - Freeborn - lake and stream restoration, wetlands, water retention/infiltration, vegetative buffers			
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Biota (Aquatic Life) Address the stressors to aquatic life in the Plan. Aquatic life use impairments within the watershed are complex. Biotic impairments are a result of nonpoint source pollution and localized stress linked to poor habitat condition and altered hydrology. High nitrogen and phosphorus levels are likely impacting fish and macroinvertebrate communities in the southern part of the watershed. Stabilizing hydrology, increasing riparian buffer width, and stabilizing stream banks would greatly help the in stream habitat.	yes		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Altered Hydrology Seek changes to the landscape that reduce the volume, rates, and timing of runoff and increase the base flows needed to prevent continued and further impairments. A primary stressor to the majority of the biotic impairments in the watershed is altered hydrology. Other pollutants (turbidity, nutrients, bacteria, etc.) are delivered because of altered hydrology. Managing the hydrology to provide a consistent base flow is imperative for the survival of the biological communities in the watershed. Increasing rainfall infiltration and water retention, and improving riparian conditions are activities that are needed to stabilize hydrology and reduce impairments.	yes		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Turbidity and Total Suspended Solids (Aquatic Life) Reduce and control sediment entering the water bodies of the watershed. Total suspended solids (TSS), and turbidity (measure of water clarity affected by sediment, algae, and organic matter), are common impairments and stressors to aquatic life in the watershed. Reducing TSS will also likely reduce the means by which other pollutants are conveyed (phosphorus and bacteria).	yes		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Nutrients (Aquatic life/Eutrophication) Reduce nutrient delivery to the watershed. High levels of nutrients (phosphorus) are driving nuisance algae blooms in the watershed's impaired lakes, and threatening other lakes that are on the verge of becoming impaired. Algae blooms can deprive lakes of their oxygen as the algae die off and decay, causing fish kills. High levels of algae cause increased levels of turbidity, degrading aquatic recreation and aquatic life. Blue-green algae can also cause serious health issues for humans and pets.	yes		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Bacteria (Aquatic Recreation) Control pathways delivering human and livestock feces to the LRW. High levels of bacteria are widespread across the western portion of the watershed. The abundance of feedlots, feedlot runoff, improper manure management, and over-grazed pastures in the watershed may correlate with this finding. High bacteria levels are also attributed to noncompliant septic systems.	yes		
Waseca.SWCD_Priority Issues Letter	Priority Practices should include soil health, wetland restorations, stabilizing concentrated flow erosion, snag removal from the Le Sueur River channel, water storage, and perennial cover.	yes		
Le Sueur River WRAPS Report	This altered hydrology affects sediment delivery, nutrient cycling, and habitat			
Le Sueur River WRAPS Report	Le Sueur River Watershed contributes high yields and flow-weighted mean concentrations (FWMC) of water pollutants including total suspended sediment (TSS), total phosphorus (TP), and total nitrogen (TN).			
Le Sueur River WRAPS Report	In 2008-2009, 74 of the 136 stream Assessment Unit Identification (AUID) reaches and 9 of the 52 lakes in the Le Sueur River Watershed were monitored and assessed as impaired or supporting at least one of their beneficial uses (Figure 5)			
Le Sueur River WRAPS Report	Of the 74 stream reaches that were monitored, 22 were assessed, one supported aquatic life, 12 were impaired for impacts to aquatic life, 8 were impaired for impacts to aquatic life and impaired for impacts to aquatic recreation, and one was impaired for impacts to a limited resource water.			
Le Sueur River WRAPS Report	Refer to Table 3 for the identified stressors which include: altered hydrology; poor habitat; and high turbidity, nitrate, and phosphorus concentrations; low DO concentrations; and lack of connectivity.			
Le Sueur River WRAPS Report	The Le Sueur River Watershed is a prolific source of total suspended solids (TSS) which affects downstream waters including the Minnesota River and Lake Pepin.			
Le Sueur River WRAPS Report	The watershed has geologic properties (as discussed in Section 2) that make it susceptible to high erosion; however, the altered hydrology within the watershed has exacerbated sediment loadings – unnaturally high river flows accelerate river bank/bluff erosion.			
Le Sueur River WRAPS Report	For instance, in An Integrated Sediment Budget for the Le Sueur River Basin, Gran et al. (2011) estimate the sediment production of the watershed to be 400-500% more today than it was pre-European settlement.			
Le Sueur River WRAPS Report	High TSS concentrations in surface runoff typically occur in high precipitation months generally in the spring/early summer (refer back to Figure 10), when there is little plant coverage of field soils. Tile drained water is generally very low in TSS; however, once it reaches a ravine or stream, this water contributes to the force that can cause ravines and river banks to erode.			
Le Sueur River WRAPS Report	In an average precipitation year, agricultural sources account for approximately 90% of TN load to the Minnesota River.			
Le Sueur River WRAPS Report	In the Minnesota River basin, in an average precipitation year, roughly half of the phosphorus load to surface water is directly from agricultural runoff and tile drainage (combined), with additional significant contributions from stream bank erosion, point sources, and atmospheric deposition			

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified	Notes
Le Sueur River WRAPS Report	Typically, high surface water TP concentrations occur in months with high rainfall amounts (refer back to Figure 10) or snow melt. Under certain conditions, however, TP concentrations can be high in tile drainage water.			
Le Sueur River WRAPS Report	Phosphorus sources to lakes are discussed in the Le Sueur River Watershed TMDL (MPCA 2015) and the Lakes Report (MPCA 2010). Similar to the phosphorus source proportions reported above, field runoff is generally the largest contributor. Internal contributions (from re-suspension of lake-bottom sediment) are suspected to be high for a few lakes. Smaller contributions are estimated to be delivered from septic systems and impervious surface runoff.			
Le Sueur River WRAPS Report	Since the Le Sueur River Watershed and pollutant source contributions are generally dominated by agriculture, reducing pollutant/stressor contributions from agricultural sources is a high priority.			
Le Sueur River WRAPS Report	The authors note that the group favored addressing hydrology to control ravine erosion. The provided link summarizes the findings and recommended strategies to address ravine sediment contributions.			
Le Sueur River WRAPS Report	priority areas - Impaired streams and lakes (subwatersheds) including the type and number of associated impairment parameters and stressors			
Le Sueur River WRAPS Report	priority areas - Lake subwatersheds with declining trends			
Le Sueur River WRAPS Report	priority areas - High loading HSPF modeled subwatersheds			
Le Sueur River WRAPS Report	Le Sueur River Watershed Network - Strategically placed buffers, terraces, and grassed waterways			
Le Sueur River WRAPS Report	Le Sueur River Watershed Network - River channel maintenance of major snags			
Le Sueur River WRAPS Report	Le Sueur River Watershed Network - Streambank and ravine stabilization			
Le Sueur River Watershed Monitoring and Assessment Report	Twenty-five (25) new impairments of aquatic life have been added to the LeSueur River watershed during the 2010 assessment cycle.			
Le Sueur River Watershed Monitoring and Assessment Report	Habitat assessments also indicate that there many problems in the watershed. Water chemistry impairments involving low dissolved oxygen and high bacteria concentrations are common across the watershed's tributaries.			
Assessment Report of Selected Lakes Within the Le Sueur River Watershed Minnesota River Basin	Reducing levels of TP will be required in order to reduce the occurrence of algal blooms for lakes within the Le Sueur River watershed. Alternatively, should in-lake TP concentrations increase, the potential for nuisance algal blooms will also increase. It is important to limit as much external (watershed) phosphorus loading to the lakes as possible to improve or maintain the current concentrations. Additionally, the watersheds for each of these lakes will need to be addressed through a TMDL study to determine the source and extent of pollution problems.			
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Nitrate*		County Ditch 15-2	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Nitrate*		County Ditch 12	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Nitrate*		Iosco Creek	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Nitrate*		County Ditch 6	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Phosphorus*		County Ditch 6	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Phosphorus*		Unnamed Creek (07020011-510)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Nitrate*		Le Sueur River (07020011-619)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Turbidity/TSS		Le Sueur River (07020011-619)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Phosphorus*		Le Sueur River (07020011-507)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Nitrate*		Le Sueur River (07020011-507)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Turbidity/TSS		Le Sueur River (07020011-507)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Phosphorus*		Le Sueur River (07020011-501)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Nitrate*		Le Sueur River (07020011-501)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Turbidity/TSS		Le Sueur River (07020011-501)	
Le Sueur River Watershed Biotic Stressor Identification Report	Low Dissolved Oxygen (DO)		Little Cobb River (07020011-504)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Phosphorus*		Little Cobb River (07020011-504)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Nitrate*		Little Cobb River (07020011-504)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Turbidity/TSS		Little Cobb River (07020011-504)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Nitrate*		Cobb River (07020011-568)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Turbidity/TSS		Cobb River (07020011-568)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Nitrate*		Cobb River (07020011-556)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Turbidity/TSS		Cobb River (07020011-556)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Phosphorus*		Cobb River (07020011-556)	
Le Sueur River Watershed Biotic Stressor Identification Report	Low Dissolved Oxygen (DO)		Rice Creek (07020011-531)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Turbidity/TSS		Rice Creek (07020011-531)	

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified	Notes
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Nitrate*		Rice Creek (07020011-531)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Turbidity/TSS		Rice Creek (07020011-531)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Phosphorus*		Rice Creek (07020011-531)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Turbidity/TSS		Maple River (07020011-535)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Phosphorus*		Maple River (07020011-534)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Nitrate*		Maple River (07020011-534)	
Le Sueur River Watershed Biotic Stressor Identification Report	Elevated Turbidity/TSS		Maple River (07020011-534)	
Le Sueur River Watershed Biotic Stressor Identification Report	Currently, there is only one AUID that is listed as impaired for low DO. The Little Cobb River, from Bull Run Creek to Cobb River, was added to the impaired waters list in 2010. U			
Le Sueur River Watershed Biotic Stressor Identification Report	Currently, there are thirteen AUIDs in the Le Sueur River watershed that are impaired for turbidity (Table 8). Of those, nine have listings for biological impairments (denoted with an asterisk after Assessment Unit description). One biological effect of increased suspended sediment is a decrease in smallmouth bass. In the Le Sueur River watershed only two smallmouth bass were surveyed, both in the Le Sueur River.			
Le Sueur River Watershed Biotic Stressor Identification Report	Additionally, a large number of bottom feeders (such as carp), which stir up bottom sediments can be a source of turbidity.Common carp are found in the Le Sueur River watershed with stations ranging in their abundance from 0 to 1025 fish (Figure 9).			
Le Sueur River Watershed Biotic Stressor Identification Report	With pressures increasing from downstream stakeholders including communities of the Minnesota and Mississippi Rivers, the Le Sueur River's increased delivery of water, sediment, and nutrients now represents an important water quality problem that necessitates action.		Le Sueur River	
Le Sueur River Watershed TMDL	E. coli bacteria may have the ability to reproduce naturally in water and sediment. Two Minnesota studies describe the presence and growth of "naturalized" or "indigenous" strains of E. coli in watershed soils (Ishii et al. 2006) and ditch sediment and water (Sadowsky et al. 2010).		Le Sueur River	
Le Sueur River Watershed TMDL	Internal Load – Under anoxic conditions, weak iron-P bonds break, releasing P in a highly available form for algal uptake. Carp and other rough fish present in lakes can lead to increased nutrients in the water column as they uproot aquatic macrophytes during feeding and spawning and re-suspend bottom sediments.		Madison, Elysian, Eagle, Freeborn	
Le Sueur River Watershed TMDL	Pollutants from stormwater runoff can include pesticides, fertilizer, oil, metals, pathogens, salt, sediment, litter and other debris.		Le Sueur River	
An Integrated Sediment Budget for the Le Sueur River Basin	The Le Sueur watershed is large (2,880 km2) and is prolific source of sediment.		Le Sueur River	
An Integrated Sediment Budget for the Le Sueur River Basin	we have determined that long-term valley excavation before the time of European settlement contributed 50,000 Mg/yr of fine-grained sediment to the mouth of the Le Sueur River. An additional 10,000 Mg/yr came from ravine excavation, with minimal sediment derived from the low-gradient uplands.		Le Sueur River	
An Integrated Sediment Budget for the Le Sueur River Basin	The nearly complete transformation of the land surface, vegetation, and hydrology over the past two centuries has increased these already large sediment loadings by a factor of four to five.		Le Sueur River	
An Integrated Sediment Budget for the Le Sueur River Basin	The increased delivery of water, sediment, and nutrients to the Minnesota River from the Le Sueur and nearby watersheds now represents an important water quality problem that the State of Minnesota is addressing.		Le Sueur River	
An Integrated Sediment Budget for the Le Sueur River Basin	Current erosion from bluffs is producing the majority of the fine-grained sediment. Net contributions from the channel and floodplain adds an additional 8%, with most of that sediment coming from channel widening.		Le Sueur River	
An Integrated Sediment Budget for the Le Sueur River Basin	The other main sources of sediment, ravines and uplands, contribute approximately 9% and 27% of the annual sediment load on average in the modern time period (2000-2010) (Figure ES.1).		Le Sueur River	
An Integrated Sediment Budget for the Le Sueur River Basin	Although agricultural uplands account for only one quarter of the suspended sediment currently exported from the Le Sueur watershed, upland sediment represents the source which has experienced the largest percentage increase in erosion rates and is the dominant source above the incised reach.		Le Sueur River	
An Integrated Sediment Budget for the Le Sueur River Basin	The contribution of ravines to the total sediment loading is smaller than bluffs due to their much smaller spatial extent. Nonetheless, some ravines can deliver sediment to the river channel at very large rates, and these sediment hot-spots can represent good initial management opportunities for sediment reduction.		Le Sueur River	
An Integrated Sediment Budget for the Le Sueur River Basin	although the dominance of sediment loading from bluff and ravine erosion in the knick zone has been demonstrated, management actions require specific identification of sites for prioritized action.		Le Sueur River	
An Integrated Sediment Budget for the Le Sueur River Basin	Based on stream gauging results, more sediment is delivered to the Minnesota River from its tributaries than is discharged to the Mississippi and Lake Pepin, indicating that sediment		Le Sueur River	
Bull Run Creek Subwatershed Assessment	The 711,000 acre (1,111 square mile) watershed sends a disproportionate amount of pollution downstream. It is a prolific source of total suspended solids and nutrients which impact downstream receiving waters such as the Minnesota River, Mississippi River, Lake Pepin and the Gulf of Mexico.		Le Sueur River	

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified	Notes
Bull Run Creek Subwatershed Assessment	The Le Sueur is listed as a priority watershed for both nitrogen and phosphorus in the Minnesota Nutrient Reduction Strategy.	Yes	Le Sueur River	
Bull Run Creek Subwatershed Assessment	Studies have documented flooding, tree snags, collapsing streambanks and bluffs and high levels of sediment, nutrients, and bacteria.			
Bull Run Creek Subwatershed Assessment	Numerous residents expressed a need to address flooding and pollutant load issues in the Bull Run Creek subwatershed.		Bull Run Subwatershed	
Farm America Subwatershed Assessment	Goal 3: Identify water storage and BMP opportunities in the Farm America subwatershed for flow and pollutant reductions		Farm America Subwatershed	
Freeborn Lake Subwatershed Assessment	Freeborn Lake is non-supporting of aquatic recreational use and listed as impaired under the 2018 303(d) Impaired Waters List.		Freeborn Lake	
Freeborn Lake Subwatershed Assessment	Freeborn Lake is listed as impaired waters for nutrients (2018 impaired waters list; Figure 15). MPCA's Monitoring and Assessment Report states: "Based on the trophic status data, Freeborn Lake was classified as hypereutrophic. Freeborn Lake water quality has also failed to meet aquatic recreational use standards for shallow lakes (Class 2b) in the Western Corn Belt Plains Ecoregion. Water clarity of Freeborn Lake is below the range expected for its ecoregion, with an average of just 0.2 meters (0.7 feet) (MPCA, 2012).		Freeborn Lake	
Freeborn Lake Subwatershed Assessment	Additionally, based on the Total phosphorus and chlorophyll-a assessment standards, Freeborn Lake was determined to be non-supporting of aquatic recreational use and was listed as impaired on the 2012 303(d) Impaired Waters List" (MPCA, 2012).		Freeborn Lake	
Freeborn Lake Subwatershed Assessment	A Future of Freeborn Lake Citizen Survey was administered in April 2015. Most survey respondents noted that the water quality, recreation, fishing, wildlife and aesthetics in Freeborn Lake needed improvement		Freeborn Lake	
Freeborn Lake Subwatershed Assessment	At the meeting in November 2018, after the successful lake reclamation project, citizens strongly voiced an interest in figuring out ways to maintain the lake's improved water quality. They valued the cleaner water, healthier lakeshore, more abundant wildlife, and improved recreational opportunities. Citizens expressed an interest in developing strategies both in the city and upland to reduce phosphorus loads into the lake. More detailed meeting notes can be found in Appendix B.		Freeborn Lake Freeborn Subwatershed	
Freeborn Lake Subwatershed Assessment	Goal 1: Support conservation targeting to reduce nutrient loads and improve water quality			
Freeborn Lake Subwatershed Assessment	Desired Outcomes: Improve the health of the Freeborn Lake Watershed by reducing nutrient inputs, improving soil health and increasing water storage and perennial vegetation on the landscape. Soil and water conservation practices, protecting and restoring critical habitats, and local partnerships are essential components to enhance water quality and improve fish and		Freeborn Subwatershed	
Boot Creek Subwatershed Assessment	Impacts to water quality and quantity effecting downstream communities		Boot Creek Subwatershed	
Science Briefing Booklet - Le Sueur River Watershed	"Changes in streamflow can have important water-quality consequences such as increased river erosion, including stream-channelwidening, resulting in greater sediment loading and increased river turbidity."			
Science Briefing Booklet - Le Sueur River Watershed	Excessive amounts of nutrients, namely phosphorus and nitrogen, contaminate ground and surface waters and create nuisance algae presence in area waters. Major contributors are cropland, urban grasses, municipal wastewater, aging or non-compliant septic systems, and internal cycling.			
Science Briefing Booklet - Le Sueur River Watershed	The Le Sueur River is one of the heaviest contributors of sediment to the Minnesota River. As the Minnesota River flows into the Mississippi, it carries excess sediment and nutrients. Three rivers contribute sediment to Lake Pepin: The Minnesota, St. Croix, and Mississippi Rivers. Scientists have studied sources of sediment into the lake and determined that the Minnesota River contributes approximately 85 percent of the sediment load.			
Science Briefing Booklet - Le Sueur River Watershed	In Lake Pepin, Phosphorus is accumulating in the sediment at 15 times the natural rate.			

Upland Habitat

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Waseca County Local Water Management Plan Amendment 2015-2018	Natural Corridors and Shoreland Management - Natural corridors and shoreland management go hand-in-hand with protecting water resources for a variety of reasons. Natural corridors (sometimes referred to as open space), also help to maintain biological diversity and provide connectivity between the community's most valuable resources. As shorelands continue to be developed, valuable natural assets are slowly being lost. Over the past decade, the importance of protecting shallow lakes (or wetlands) for water-quality purposes has received an increasing amount of public scrutiny. As a result, the County is currently examining adopting tougher shoreland management provisions.	yes	
Waseca County Local Water Management Plan Amendment 2015-2018	Objective 2: Develop and implement reasonable strategies to protect and enhance natural corridors.		
Blue Earth Water Management Plan 2017-2026	Land Use Priorities - developed land use - shorelands - shoreland areas are a priority for protecting critical habitat and water quality as phosphorus runoff from developed land in shoreland is typically highter on a per-acre basis compared with other landuses	Yes	
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Objectivo 5: Increase habitat and plant diversity in areas that will have multiple benefits including erosion control, water quality filtering, wetland establishment, and general habitat improvement for wildlife and pollinators		
BWSR response to Le Sueur notification	Pollinator Habitat and Vegetative Cover- In 2019 Governor Walz signed an Executive Order for "Restoring Healthy, Diverse Pollinator Populations that Sustain and Enhance Minnesota's Environment, Economy, and Way of Life". BWSR encourages the partnership to prioritize actions that create areas of vegetative cover that also act as refuge and provide floral resources that can benefit a wide range of pollinators. BWSR has developed a Pollinator Toolbox that provides resources and guidance for project planning, implementation, and management.	yes	
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Land Use Impacting Terrestrial and Aquatic Habitat Utilize land use tools, such as a zoning codes and ordinances, to address new challenges that negatively impact our ecosystems and confine surface water hydrology.	yes	
Le Sueur River WRAPS Report	Altered hydrology is the primary cause of degraded habitat throughout the watershed; changes in the connectivity, timing, and amount of flow have created stream instability, vegetation loss, and reduction or elimination of floodplain connectivity. Additional habitat concerns in the watershed include degraded riparian conditions, including loss of riparian vegetation.		
Bull Run Creek Subwatershed Assessment	Research has also found poor habitat for fish and wildlife. The numbers of mussels, fish and bugs — in both diversity and abundance — are much lower in the Le Sueur than for similar river systems		

Manage, Enhance, and Restore Habitat

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Freeborn Lake Subwatershed Assessment	A Future of Freeborn Lake Citizen Survey was administered in April 2015. Most survey respondents noted that the water quality, recreation, fishing, wildlife and aesthetics in Freeborn Lake needed improvement.		Freeborn Lake
Freeborn Lake Subwatershed Assessment	At the meeting in November 2018, after the successful lake reclamation project, citizens strongly voiced an interest in figuring out ways to maintain the lake's improved water quality. They valued the cleaner water, healthier lakeshore, more abundant wildlife, and improved recreational opportunities. Citizens expressed an interest in developing strategies both in the city and upland to reduce phosphorus loads into the lake. More detailed meeting notes can be found in Appendix B.		Freeborn Lake

Land Development

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Le Sueur River WRAPS Report	Some of the most recent hydrologic alterations include increases in tiled acres, tile density, precipitation, the replacement of Conservation Reserve Program (FSA 2013) land with cropped land, and increased impervious surfaces.		

Preserve Sites of High Ecological Value

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Blue Earth Water Management Plan 2017-2026	Greenprint River Corridors		
Blue Earth Water Management Plan 2017-2026	Greenprint Wetland Complexes		

Wetland Habitat

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Blue Earth Water Management Plan 2017-2026	Wetland Protection Enhancement Restoration - wetland restoration priorities will be related to the wetlands potential to provide one of more wetland functions such as water storage, nutrient treatment, wildlife habitat, or ability to provide multiple benefits with the greatest local public value	Yes	
Blue Earth Water Management Plan 2017-2026	Habitat Loss		
Blue Earth Water Management Plan 2017-2026	Habitat degradation		
Blue Earth Water Management Plan 2017-2026	Habitat fragmentation		
Blue Earth Water Management Plan 2017-2026	Long Term Reouse Needs - Wetland protection buffers		
Blue Earth Water Management Plan 2017-2026	Goal: Protect, enhance, and restore wetlands in areas to provide important water quality, wildlife, and groundwater protection functions in local watersheds		
Blue Earth County Soil and Water Conservation District Comprehensive Plan 2017-2021	Objective 5: Increase habitat and plant diversity in areas that will have multiple benefits including erosion control, water quality filtering, wetland establishment, and general habitat improvement for wildlife and pollinators		
BWSR response to Le Sueur notification	Wetlands -- Protection and restoration of wetlands provides benefits for water quality, flood damage reduction, and wildlife habitat. The plan should support the continued implementation of the Wetland Conservation Act and look for opportunities to improve coordination across jurisdictional boundaries. The plan should also identify high priority areas for wetland restoration and strategically target restoration projects to those areas. The Restorable Wetland Prioritization Tool is an example resource that can be used to help identify such areas. Minnesota is embarking on a new wetland prioritization plan that will guide wetland mitigation in the future. Wetland restoration and preservation priorities in this watershed plan may be eligible for inclusion in the prioritization plan in the future.	yes	

Waste & Feedlots

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Waste Disposal and Management Concerns Goals Summary (SSTS) Goal #1 Protect surface water and ground water from subsurface sewage treatment system (SSTS) contamination.	yes	
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Waste Disposal and Management Concerns Goals Summary (Feedlots) Goal #2 Protect surface water and groundwater resources from feedlot/ animal waste contamination.	yes	
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Waste Disposal and Management Concerns Goals Summary Goal #3 Manage animal manure for land applications.	yes	
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Goal #4 Protect surface water and ground water from mixed solid waste contamination.	yes	
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Goal #5 Protect surface water and ground water from hazardous waste pollution.	yes	
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Municipal Wastewater and Stormwater Goals Summary Goal #1 Protect surface water and groundwater from municipal wastewater and stormwater contamination.	yes	
Waseca County Local Water Management Plan Amendment 2015-2018	Feedlots – Waseca County has approximately 240 feedlots. The potential stress to water quality from the huge volumes of manure is clearly a water quality priority for management. There are many related animal management issues besides the direct runoff of manure with its common pollutants (biochemical oxygen demand, ammonia, nutrients and fecal coliform bacteria). There are also environmental concerns with nitrate and chloride pollution being introduced to ground waters (demonstrating the need for adequate nutrient management for farmers/agricultural producers) and emerging issues related to antibiotic resistant organisms spreading in the environment. Manure management issues will also be discussed.	yes	
Waseca County Local Water Management Plan Amendment 2015-2018	Septic Systems - Upgrading Subsurface Sewage Treatment Systems (SSTS, formerly known as ISTS) in Waseca County will help reduce loading of fecal coliform bacteria and nutrients to surface waters. Because of this large task, it is important that the County continue to develop strategies to address this issue.	yes	
Waseca County Local Water Management Plan Amendment 2015-2018	Objective 2: Properly manage pollution caused by feedlots and industry.		
Waseca County Local Water Management Plan Amendment 2015-2018	Objective 3: Identify non-compliant septic systems.		
Blue Earth Water Management Plan 2017-2026	Land Use Priorities - developed land use - Wastewater - managing wastewater is critical for protecting human health and surface water quality. Any type of development that utilizes on site sewage treatement is a priority	Yes	
Blue Earth Water Management Plan 2017-2026	Land Use Priorties - Agricultrual Land Uses - Feedlots - feedlot runoff protenial is greatest for open lots and lots with less than 300 animals units. Priority areas are where there is runoff or soil erosion from cropland where manure as applied, where there is runoff from open lots and where manure if applied too close to tile inlets.	Yes	
Blue Earth Water Management Plan 2017-2026	Goal: Minimize potential transport of bacteria and nutients to surface water and groundwater from feedlot and manure applied to cropland		
Blue Earth Water Management Plan 2017-2026	Goal: Eliminate discharge of untreated and undertreated waste water to surface water and groundwater		
Blue Earth Water Management Plan 2017-2026	Goal: Ensure all subsurface sewage treatment systems (SSTS) are in compliance with Blue Earth County Code		
BWSR response to Le Sueur notification	Local Controls – Gaps or inconsistencies in local ordinances, policies, or enforcement could affect the success of your plan's implementation. Subsurface Sewage Treatment Systems (SSTS) compliance inspection requirements (property transfer, variance, etc.), level 3 feedlot inventories, drainage processes and proceedings, and shoreland regulations are some examples that should be explored during plan development.	yes	
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Nutrients (Aquatic life/Eutrophication) Management plans that appropriately value the nutrient worth of manure and previous crops and focus on the timing and intensity of the fertilizers and manure applications will help reduce the amount of phosphorus and nitrogen reaching the river. Those reductions would also aid in the low dissolved oxygen problems present in some parts of the watershed.	yes	
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Bacteria (Aquatic Recreation) Control pathways delivering human and livestock feces to the LRW. High levels of bacteria are widespread across the western portion of the watershed. The abundance of feedlots, feedlot runoff, improper manure management, and over-grazed pastures in the watershed may correlate with this finding. High bacteria levels are also attributed to noncompliant septic systems.	yes	
Le Sueur River WRAPS Report	While 99% of fecal coliform is produced by domesticated farm animals according to the TMDL, the sources of fecal bacteria are not numerically proportioned.		
Le Sueur River Watershed TMDL	Likely sources of bacteria in the Le Sueur River Watershed include wastewater treatment facilities (WWTFs), unsewered communities, inadequate subsurface sewage treatment systems (SSTS), Municipal Separate Storm Sewer System (MS4) communities and livestock.		Le Sueur River
Le Sueur River Watershed TMDL	Livestock – Both feedlots and pasture are present in the Le Sueur River Watershed. Livestock can contribute bacteria to the watershed through runoff from poorly managed feedlots as well as direct loading if allowed access to streams or lakes. Additional runoff can occur through manure applications. Livestock numbers by watershed, based on the MPCA record of registered feedlots, are included in Table 3.8.		Le Sueur River
Le Sueur River Watershed TMDL	WWTFs- Human waste can be a significant source of E. coli during low flow periods. Ten WWTFs discharge into the impaired stream reaches addressed in this report. Six of these facilities have controlled discharge (pond) systems with discharge windows during higher flows. These controlled discharge facilities are not likely to be a source during low flow periods. The other four facilities are continuous discharge systems and are likely a source during low flow periods. Rarely, during extreme high flow conditions, WWTFs may also be a source if they become overloaded and have an emergency discharge of partially or untreated sewage, known as a bypass.		Le Sueur River
Le Sueur River Watershed TMDL	Unsewered communities –10 unsewered, unincorporated communities are located in the addressed subwatersheds. The partially treated or untreated sewage from these communities is potentially a continuous source of bacteria. The proportion contributed by these sources tends to be more significant during lower stream flow conditions.		Le Sueur River
Le Sueur River Watershed TMDL	Inadequate SSTS –Without individual inspections it is difficult to know for certain the rate of compliance for septic systems in the watershed. Individual County estimates from the Le Sueur River Watershed range from 35%-75% compliance. These systems discharge partially treated or untreated sewage and are potentially a continuous source of bacteria. The proportion contributed by these sources tends to be more significant during lower stream flow conditions.		Le Sueur River
Le Sueur River Watershed TMDL	MS4 Communities – Parts of two MS4s, Mankato and Waseca, are located in the addressed subwatersheds. Stormwater runoff from these communities may contain bacteria.		Le Sueur River
Le Sueur River Watershed TMDL	Wildlife and pets may also be contributing some bacteria to the system.		Le Sueur River
Le Sueur River Watershed TMDL	E. coli bacteria may have the ability to reproduce naturally in water and sediment. Two Minnesota studies describe the presence and growth of "naturalized" or "indigenous" strains of E. coli in watershed soils (Ishii et al. 2006) and ditch sediment and water (Sadowsky et al. 2010).		Le Sueur River
Le Sueur River Watershed TMDL	Inadequate SSTS - The compliance rate of septic systems cannot be determined without individual inspections. However, county estimates range from 35%-75% compliance.		Madison, Elysian, Eagle, Freeborn
Science Briefing Booklet - Le Sueur River Watershed	Managing farms to minimize excess nutrients, pathogens, and odors released into the environment is important to the health of surface and ground water. Agricultural operations need to adequately maintain cropping systems to reduce nonpoint pollution, while feedlot operations need to contain their manure storage areas. Erosion and sedimentation from these operations needs to be closely monitored to reduce the levels of nutrients entering our surface water resources.		

Water Rate & Quantity

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Faribault County Water Plan 2018-2027	surface water quantity and quality	yes	
Faribault County Water Plan 2018-2027	Protect and restore the quality and manage the quantity of surface water.	yes	
Freeborn County Comprehensive Water Plan Amendment to Implementation 2016-2021	Surface Water Concerns Goals Summary (Watershed/Impairment:) Goal #3 Manage watersheds to control surface water runoff	yes	
Waseca County Local Water Management Plan Amendment 2015-2018	Stormwater Management - Stormwater is the water that flows over the land after a rain event or snowmelt. It carries with it pollutants such as sediment, phosphorus, coliform bacteria, oils, toxins, and debris. Surficial interactions also result in increased water temperatures. When natural areas are developed, the amount of impervious land surface increases, in turn increasing the volume and velocity of stormwater. This polluted stormwater discharges into streams and lakes. Lowering stormwater volumes and velocity, as well as hindering temperature increases of waters in which it comes in contact with, helps maintain the health of County waters and biological communities within.	yes	
Waseca County Local Water Management Plan Amendment 2015-2018	Integrate Hydrologic Management Systems into Watershed Plans		
Blue Earth Water Management Plan 2017-2026	Wetland Protection Enhancement Restoration - wetland restoration priorities will be related to the wetlands potential to provide one of more wetland functions such as water storage, nutrient treatment, wildlife habitat, or ability to provide multiple benefits with the greatest local public value	Yes	
Blue Earth Water Management Plan 2017-2026	Goal: Drainage projects plans will identify potential wetland preseration and restoration projects, creation of water quality improvements, or flood control project to provide measurable water quality benefits in receiving waters		
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Hydrologic Conditions – Altered Hydrology The impacts of altered hydrology in this watershed are significant. Since 1990, stream channel-forming flows have almost doubled. Flooding in recent years has severely impacted the communities of St Clair, New Richland, and rural areas near Mankato. Frequent high flows and cumulative flow volume are impacting homes, roads, private property, and recreational opportunities. Changing land use and climate – such as shifts in cropping, unmitigated drainage improvements, new impervious surfaces, and higher rainfall volume and duration—have increased the volume of surface water in the Le Sueur River watershed.	yes	
DNR Priority Issues Letter_ Le Sueur Watershed_mailed	Channel Erosion and Stability The Le Sueur River and many of its tributaries are impaired for sediment primarily from stream channels, banks, and bluffs. Rivers and streams in the watershed have more occurrences of high flows and low flows, along with changes in seasonality, and increased cumulative annual flows.	yes	
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Le Sueur River Watershed Network - Experimentation and demonstration with temporary water storage		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Staff-Identified Priorities and Challenges - Blue Earth - lakes, urban development, bluff, ravine and field erosion, water retention and wetland restoration		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Staff-Identified Priorities and Challenges - Freeborn - lake and stream restoration, wetlands, water retention/infiltration, vegetative buffers		
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Altered Hydrology Seek changes to the landscape that reduce the volume, rates, and timing of runoff and increase the base flows needed to prevent continued and further impairments. A primary stressor to the majority of the biotic impairments in the watershed is altered hydrology. Other pollutants (turbidity, nutrients, bacteria, etc.) are delivered because of altered hydrology. Managing the hydrology to provide a consistent base flow is imperative for the survival of the biological communities in the watershed. Increasing rainfall infiltration and water retention, and improving riparian conditions are activities that are needed to stabilize hydrology and reduce impairments.	yes	
Waseca SWCD_Priority Issues Letter	Priority Practices should include soil health, wetland restorations, stabilizing concentrated flow erosion, snag removal from the Le Sueur River channel, water storage, and perennial cover.	yes	
Le Sueur River WRAPS Report	Of the eleven lakes that were monitored, two supported aquatic recreation, five were impaired for impacts to aquatic recreation, and five were not assessed due to insufficient data to make a scientifically conclusive finding (Table 1).		
Le Sueur River WRAPS Report	Increased river flows and flashiness (or rapid increases after rain) are obvious forms of altered hydrology.		
Le Sueur River WRAPS Report	The Le Sueur River's flow has roughly doubled over the past 60 years.		
Le Sueur River WRAPS Report	In addition to high river flow, altered hydrology exhibited in excessively low river base flow is an identified stressor in the Le Sueur River watershed.		
Le Sueur River WRAPS Report	These low base flow conditions have been conclusively linked to low DO conditions in at least one river reach (as discussed in the Le Sueur River watershed TMDL (MPCA 2015)) but likely have additional consequences to aquatic life (as discussed in the Stressor ID Report (MPCA 2014c)).		
Le Sueur River WRAPS Report	High TSS concentrations in surface runoff typically occur in high precipitation months generally in the spring/early summer (refer back to Figure 10), when there is little plant coverage of field soils. Tile drained water is generally very low in TSS; however, once it reaches a ravine or stream, this water contributes to the force that can cause ravines and river banks to erode.		
Le Sueur River WRAPS Report	For at least one of the reaches where low DO was found to be a pollutant and/or stressor (Little Cobb River), HSPF modeling indicates that low base flow is a primary cause of this stressor.		
Le Sueur River WRAPS Report	Le Sueur River Watershed Network - Experimentation and demonstration with temporary water storage		
Le Sueur River Watershed Biotic Stressor Identification Report			
Le Sueur River Watershed Biotic Stressor Identification Report	Lack of Physical Connectivity Flow alteration results in increased flows, change in duration of flows, flashiness, decreased baseflow, loss of groundwater recharge, changes in floodplain connection, changes to habitat, and changes in timing of flows. Flow alteration can be devastating to a biological community.	_____	Iosco Creek
Le Sueur River Watershed Biotic Stressor Identification Report	With pressures increasing from downstream stakeholders including communities of the Minnesota and Mississippi Rivers, the Le Sueur River's increased delivery of water, sediment, and nutrients now represents an important water quality problem that necessitates action.		Le Sueur River

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
An Integrated Sediment Budget for the Le Sueur River Basin	As high flows in the river are the underlying, systemic driver of near-channel erosion, increased water retention in uplands will reduce sediment loads over the long-term and can help mitigate on-going and future changes in precipitation.		Le Sueur River
An Integrated Sediment Budget for the Le Sueur River Basin	Controlling peak discharges in the river networks is imperative.		Le Sueur River
Farm America Subwatershed Assessment	Goal 1: Identify water storage opportunities along County Ditch 19 System		Farm America Subwatershed
Farm America Subwatershed Assessment	Goal 3: Identify water storage and BMP opportunities in the Farm America subwatershed for flow and pollutant reductions		Farm America Subwatershed
River Park Drive Sub Watershed Assessment	Researchers from across the country have been studying the Le Sueur River for many years (Gran, 2009; Belmont, 2017; Cho, 2019) and have documented increasing river flows, more peak flows, and a more erosive river that is leading to significant bank and bluff erosion.		
River Park Drive Sub Watershed Assessment	Goal 3: Clarify flow reduction and water storage targeting opportunities		

Other Miscellaneous

RESPONSE LETTERS WATER PLANS REPORTS

Issue Source	Resource Issue	Priority Issue?	Specific Resource Identified
Faribault County Water Plan 2018-2027	Prevent additional impacts to surface waters through better land use and regulatory controls		
Waseca County Local Water Management Plan Amendment 2015-2018	Objective 1. Develop and implement reasonable strategies to protect and enhance shorelands.		
Waseca County Local Water Management Plan Amendment 2015-2018	Support Innovative Nonregulatory Approaches		
BWSR response to Le Sueur notification	GRAPS – The Groundwater Restoration and Protection Strategies (GRAPS) for the Le Sueur River watershed planning area is in development and will be available in the near future. This report will help identify specific groundwater issues in the planning area; therefore, implementation actions to address these issues should be considered in the plan.	yes	
MPCA Priority Issues Le Sueur 1W1P 2021-2031	Le Sueur River Watershed Network - Less red tape		
Waseca SWCD_Priority Issues Letter	Local Priorities - Iosco Creek / Lake Elysian, Bull Run Creek, JD 6 watershed, cd 47	yes	Iosco Creek / Lake Elysian, Bull Run Creek, JD 6 watershed, cd 47
Le Sueur River WRAPS Report	Lack of connectivity was identified as a stressor on one stream reach (CD 6). The cause of the lack of connectivity in CD6 was identified as the manmade water control structure downstream from Lake Elysian.		Lake Elysian
Le Sueur River WRAPS Report	Le Sueur River Watershed Network - Less red tape		
Le Sueur River Watershed Biotic Stressor Identification Report	The Le Sueur River watershed has numerous dams throughout the watershed (Figure 14). Dams are known to alter connectivity for biological communities; however, there are no known dams on biologically impaired reaches in the watershed.		

D

APPENDIX D: RESOURCE PRIORITIZATION AND ISSUE STATEMENTS

D

APPENDIX D: RESOURCE PRIORITIZATION AND ISSUE STATEMENTS

Introduction

The partnership developed a framework for each issue statement. To address the concerns for each issue statement, the framework defines:

- Desired Future Conditions
- Measurable Goals
- Priority Resources
- Targeting criteria
- Strategies

The framework outlined in this appendix is the framework approved by the Policy Committee prior to the first draft of the Plan. There may be slight edits or changes based on updates completed through the review process. The final Plan framework shall follow the framework outlined in *Section 4*.

Check out this information online!
bit.ly/appendixD_LSRW

ISSUE #1: WATER QUALITY IN RIVERS AND STREAMS

Issue Statement: Poor water quality in rivers and streams due to high sediment loading, nutrient loading, and other contaminants.

Secondary Issue statements:

- The Le Sueur River delivers large sediment loads to downstream water such as the Blue Earth River, Minnesota River, and Lake Pepin.
- Poor water quality contributes to a lack of diversity and abundance to aquatic life and habitat.
- Poor surface water quality and habitat degradation limit outdoor recreation.

Desired Future Conditions:

- All rivers and streams meet applicable water quality standards.

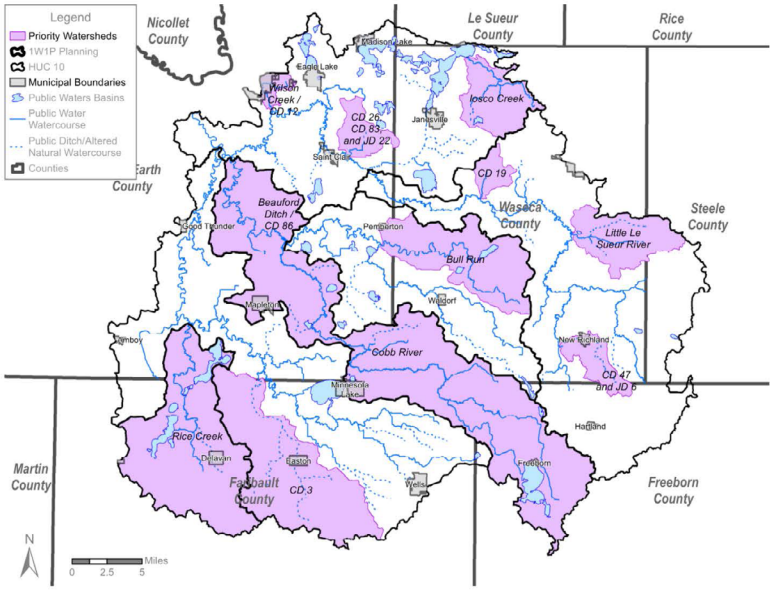
Measurable Outcome:

Priority Streams

Management Zone	Stream	HSPF Subwatershed	Reduction			Reduction (%)		
			TSS (tons/yr)	TP (lbs/yr)	TN (lbs/yr)	TSS	TP	TN
Upper Le Sueur	CD 47 and JD 6	491	560	2,900	38,000	10%	8%	3%
	Little Le Sueur River	511	200	1,300	16,000	10%	8%	3%
Middle Le Sueur	CD 19	591	50	100	3,000	7%	5%	2%
	Iosco Creek	613	200	700	10,000	8%	6%	2%
Lower Le Sueur	CD 26, CD 83, and JD 22	631	130	500	8,000	11%	8%	3%
	Wilson Creek/CD 12	690	3,180	13,100	154,000	4%	5%	2%
Upper Cobb	Upper Cobb	721	300	3,000	36,000	9%	8%	3%
Middle Cobb	Bull Run	735	150	1,700	22,000	8%	7%	2%
	Middle Cobb	745	750	4,900	72,000	5%	4%	1%
Lower Cobb	Beauford Ditch/ CD 86	747	20	200	4,000	5%	7%	3%
	Lower Cobb	751	840	5,700	83,000	4%	5%	2%
Upper Maple	CD 3	789	360	3,100	48,000	16%	11%	5%
Middle Maple	Rice Creek	809	240	2,000	22,000	11%	8%	3%

Priority Resources:

- Blue Earth Water Plan Priorities
  - Blue earth CD 23, CD 83, CD 86, and JD22 – reduce sediment from field sources, P and N
  - Wilson Creek / CD 12 – Minimize ravine and gully erosion by managing and restoring stream channels in ravine watersheds
- Faribault County Water Plan Priorities
  - Rice Creek – Address impacts of altered hydrology and drainage changes; address water quality through soil health and BMP strategies
  - Upper and Lower CD 3 - Address impacts of altered hydrology and drainage changes; address water quality through soil health and BMP strategies
- Waseca County Water Plan Priorities
  - Bull Run Creek
  - Cobb River – Delisting off impaired waters list
  - Iosco Creek
  - Waseca CD 47 and JD 6 (New Richland Watershed)
- Le Sueur River Network Priorities
  - Outlet of the Le Sueur River
  - Bull Run Creek
  - Waseca CD 19 (Farm America Watershed)
  - Waseca JD 6 and CD 47 and Boot Creek Headwaters (New Richland)
- Minnesota Nutrient Reduction Priority
  - Le Sueur River – both N and P priority watershed
- Minnesota River Sediment Strategy Priority
  - Le Sueur River



Targeting:

- Target areas contributing high loads to priority rivers and streams (HSPF fate/transport analysis)
- Target areas contributing high loads to the outlet of Le Sueur River (HSPF fate/transport analysis)
- Target areas that provide greatest multiple benefits of other issues listed below including but not limited to water rate, erosion, or wetlands
    - Ensure targeting overlaps with other issues such as water quantity issues since there is so much overlap that correlates with water quality in rivers and streams.
        - See measurable goals and targeting for water quantity, rate, and flooding
        - See measurable goals and targeting for erosion
        - See measurable goals and targeting for wetlands
        - See measurable goals and targeting for groundwater protection specifically looking at groundwater – surface water interactions and N
- Target utilizing MOSM (management option simulation model) for cost effectiveness of practices in the uplands, transitional, and incised zones under management scenarios
- ACPF results to target site specific locations

- PTMApp results to target site specific locations

Strategies: (high priority strategies provided by TAC are bolded)

- Watershed Strategies
    - BMPS to decrease nutrients (nitrates and phosphorus)
    - BMPS to decrease sediment
- Improve soil health
    - See erosion E1 strategies
- **Water Storage**
    - See water quantity, rate, and flooding strategies
- Conservation drainage management & early coordination on drainage projects
- Outreach and Education
- Subwatershed assessments – focused studies on sources assessments, prioritization, and targeting
    - Re-run ACPF and PTMApp with new and improved functionality

ISSUE #2: WATER QUALITY IN LAKES

Issue Statement: There is poor water quality in lake due to excess nutrients.

Desired Future Conditions:

- All lakes meet water quality standards for aquatic life and recreational use

Measurable Outcome:

Priority Lakes				
Management Zone	Lake	HSPF	Reductions	
			TP (lbs/yr)	TP (%)
Upper Le Sueur	Saint Olaf Lake	452	280	8.6%
Middle Le Sueur	Reeds Lake	614	0.6	0.9%
	Elysian Lake	616	424	3.6%
Lower Le Sueur	Madison Lake	676	19	1.5%
Upper Cobb	Freeborn Lake	712	31	2.2%
Middle Maple	Rice Lake	802	209	4.5%
	Bass Lake	806	0.4	0.5%
	Lura Lake	808	0.8	0.5%

Priority Resources + Targeting:

The priority resources were determined based on quantifiable scientific metrics and professional judgement criteria. Each criteria was weighted based on percent rank of the total dataset giving a value between zero and one. The percent rank for each criterion was averaged for each lake (see "Overall Score (All Criteria)" column). The top seven lakes listed in Table 1 were identified as the priority resources for lakes and will be the focus for targeted implementation for the issue related to water quality in lakes.

Table 1: Priority Resources - Lakes

Name	Geographic Management Area	County	Overall Score (All Criteria)	Scientific Metrics	Professional Judgement
Bass	Rice Creek	Faribault	0.69	0.70	0.67
Lura	Rice Creek	Blue Earth	0.66	0.68	0.63
St. Olaf	Upper Le Sueur River	Waseca	0.66	0.77	0.44

Name	Geographic Management Area	County	Overall Score (All Criteria)	Scientific Metrics	Professional Judgement
Reeds	Lower Le Sueur River	Waseca	0.65	0.74	0.47
Madison	Lower Le Sueur River	Blue Earth	0.61	0.50	0.82
Freeborn	Cobb River	Freeborn	0.57	0.43	0.85
Elysian	Lower Le Sueur	Waseca	0.52	0.45	0.66
Rice	Rice Creek	Faribault	0.34	0.35	0.31

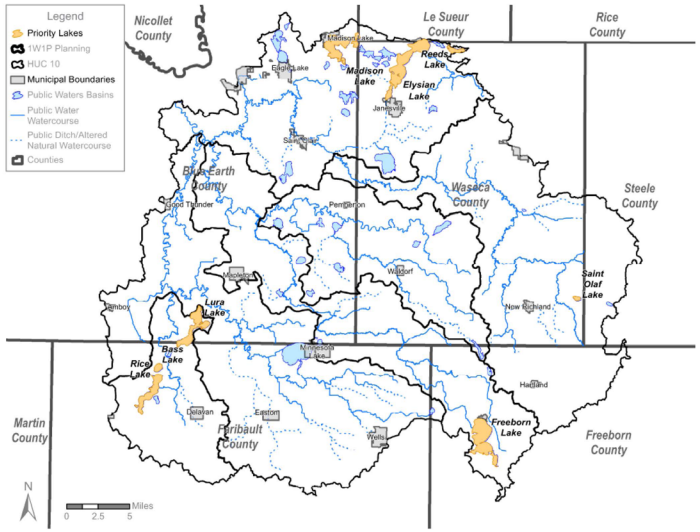


Figure 1: Le Sueur River Priority Lakes

Table 2: Prioritization Criteria for Priority Lakes

Criteria	Definition
Restoration vs. protection (impaired vs. non-impaired)	Impaired lakes will be restoration lakes and non-impaired lakes will be protection lakes. Impairments are based on 2022 draft impairment listings from the MPCA.
Subwatershed assessment, targeting or prioritization study, or implementation plan completed or in progress	A subwatershed assessment (SWA) is completed for the lake or lakeshed. A SWA could be defined by a targeting or prioritization study, or implementation strategy based on scientific data.
Identified as WRAPS priority	A lake that has been identified as a priority in the WRAPS.
Identified by citizen input / survey as priority	A lake that has been mentioned in at the kickoff meeting or survey as a local priority.

Criteria	Definition
Lake size to drainage area ratio	The ratio of lake area to watershed drainage area.
Percent mean P from P Standard	The percent change from the mean phosphorus concentration to the standard phosphorus concentrations based on the ecoregion and depth classification for the lake.
P Sensitivity	A measure of phosphorus sensitivity expressed in inches lost in water clarity with an increase in 100 pounds of phosphorus loading.
Water clarity trends	If a trend was detected based on statistical analysis completed on lakes with sufficient data collection.
Lakes of biological significance	Defined as outstanding, high, or moderate for aquatic plants, fish, birds, and amphibians.
Public accesses	The ability for citizens in the watershed to access the lake. The accessibility can be defined by size of lake, number of boat ramps, number of parking spaces, public parks, etc.
Momentum towards goals	(see criteria below)
Local support	(see criteria below)
Political support	(see criteria below)
Readiness	(see criteria below)

A survey was completed to collect input from Steering Committee members on professional judgement factors such momentum towards goals, local support, political support, and readiness criteria that cannot be captured from existing scientific studies. Criteria for professional judgement is defined below:

Momentum Towards Goals	Description
3 - high	Studies/project identification/outreach/BMPs has been implemented already; county initiatives have been undertaken that need to be supported with action.
2 - medium	Activities listed above have been, or are in the planning and development stages, but not yet implemented; funding has been secured.
1 - low	No recent activity has taken place.

Local Support	Description
3 - high	Landowners are seeking out/taking initiative; there is an active lake association; there are local champions; local match/contribution is secured.
2 - medium	Landowners will attend meetings or request information; the lake association is a social group, not particularly interested in environmental issues.
1 - low	Low rate or no contact with landowners; no lake association.

Political Support	Description
3 - high	Elected officials have provided substantial staff and financial resources, voiced political support, and worked to build community support.
2 - medium	Elected officials have provided some staff and financial resources, voiced political support, and worked to build community support.
1 - low	Elected officials have voiced political support and worked to build community support.

Readiness	Description
3 - high	There is a waiting list of projects; projects have been designed; the permits have been acquired; awaiting funding to implement.
2 - medium	Project are identified, concepts are developed, and ranked or prioritized.
1 - low	There are no pending projects or landowners ready to implement projects; no project planning scale activities have taken place.

Strategies: (high priority strategies provided by TAC are bolded)

- Watershed Strategies
  - BMPS to decrease nutrients
    - Manure management
    - Fertilizer management
    - SSTS management
    - Leaf management
  - BMPS to decrease sediment
  - **Improve soil health**
    - Cover crops
    - Reduces tillage
    - Filter strips
  - Conservation drainage management
- Lakeshore Strategies
  - Lakeshore restoration
  - **Lakeshore protection (easements/ordinances)**
- In-lake Strategies – all in lake strategies need detailed analysis and feasibility study prior to implementation for investigation of source assessments and internal and external loading. External and watershed contributions to loading should be addressed before in lake strategies are implemented.
  - Biomanipulation
  - Invasive species control (prevention, early response planning, lake vegetation management)
    - AIS management is NOT a priority for the plan but will be mentioned in narrative. Any actions would focus on research or prevention
  - Alum treatments
  - Dredging
  - Vegetation management
- **Outreach and Education**
  - Increase landowner knowledge of DNR Score Your Shore
  - Support volunteer lake groups (funding for projects, cost share, research, education, outreach, landshed planning)

  - Increase participation in lake associations
  - Increase number of lake associations or lake groups
  - Increase collaboration between lake groups and conservation partners
  - Target outreach to lake groups and conservation partners
  - Target outreach to lakeshore owners
- Lake assessments – focused studies on sources assessments, prioritization, and targeting

ISSUE #3: EROSION

Issue Statement E1: Degraded soil health has led to reduced soil water retention, decreased infiltration, and increased erosion furthering impacts of altered hydrology

Issue Statement E2: Erosion of agricultural lands delivers sediment to waterbodies

Issue Statement E3: Ravine, bank, and bluff erosion contribute sediment to rivers and streams and pose a risk to damage or loss of public and private infrastructure.

Desired Future Conditions:

Examples:

Issue Statement E1:

- All landowners in planning area implement some form of soil health practice to work towards achieving the five soil health principals of soil armoring, minimizing soil disturbance, plant diversity, continual live plant/root, and livestock integration that improves soil for agricultural production and reduce negative impacts to surface water.

Issue Statement E2:

- Identify and treat all upland areas that contribute excessive sediment to waterbodies.

Issue Statement E3:

- Ravine, bank, and bluff erosion is reduced greatly so that the Le Sueur River is no longer impaired for excess sediment and vital infrastructure is protected.

Measurable Outcome:

Issue Statement E1:

- Establish 21,467 acres of newly implemented soil health practices (cover crops and conservation till)

Issue Statement E2:

- Reduce upland sediment by 6,775 tons/yr

Issue Statement E3:

- Reduce near-channel sediment loads in the incised zone by 1,114 tons/yr
- Reduce sediment load at Le Sueur River outlet by 7,889 tons/yr

Targeting:

Issue Statement E1:

- Target areas that provide multiple benefits that address priority resources and targeted areas that address other issue statements.

- Target landowners with previous relationships established and making sure landowners who currently implement are not lost when various funding sources change or end over planning period
- Ensure O&E reaches landowners who do not currently participate in programs

Issue Statement E2:

- Target areas contributing high sediment loads to edge of watershed knickpoint (HSPF fate/transport analysis)
- Target areas draining to priority lakes and streams
- Target areas draining to streams impaired for turbidity
- Target Highly Erodible Lands
- ACPF results to target site specific locations
- PTMApp results to target site specific locations

Issue Statement E3:

- Target implementation of wetlands to increase storage
  - See targeting for wetlands issue
- Target channel/bluff stabilization projects at locations that threaten infrastructure
- Target ravine stabilization projects at identified problem areas which includes but are not limited to
  - Direct contributions to streams
  - Threatening farmland

Strategies:

E1:

- Cover Crops
- Conservation Tillage (No till or strip till w/ high residue)
- Crop Rotation
- Perennial Cover
- Outreach and Education
  - Include specifics regarding contour farming
- Establish inventory of existing efforts to implement soil health
  - Use cost-share information
  - BWSR tillage information (depending on data availability)
  - Landowner surveys?
- Reduce barriers to soil health adoption
- Establish a discovery farm as an example of 5 soil health practices and become educational source
- Establish/recommend more stringent erosion control standards
- Livestock management

E2:

- Cover crops
- Conservation Tillage (No till or strip till w/ high residue)
- Livestock Exclusion
- Grade stabilization
- WASCOBs
- Grassed waterways
- Outreach and Education

E3:

- Water storage in upland areas to reduce flows downstream that drive bluff erosion
  - Wetland restoration, enhancements, and banks
  - In channel or in ditch storage
  - Strategic culvert placements and sizing
  - Storage basins
- Controlled tile drainage in upland areas
- Reconnecting streams to floodplain
- Streambank stabilization/restorations
- Ravine grade stabilization
- Outreach and Education
- Policy considerations regarding where mining is allowed relative to streams

Memorandum
Le Sueur River One Watershed One Plan

ISSUE #4: WATER QUANTITY, RATE, AND FLOODING

Issue Statements:
Increases in peak flows and annual flow volume as a result of altered hydrology, shift in cropping practices, increases in drainage, and decrease in evapotranspiration.

Increased precipitation amount and intensities contribute to higher peak flow rates and increased volume of runoff

Increases in flooding frequency and intensity has created risks to public safety and vital infrastructure

Desired Future Conditions:

- Landscape is resilient to negative impacts of rainfall events and peak flows including riverbank stability and flooding to urban and rural areas.

Measurable Outcome:

- Implement BMPs that achieve 5,750 acre-feet of storage over the 10-year plan

Targeting:

- High Priority - Target subwatersheds with flooding impacts to communities such as St. Clair, New Richland, rural areas near Mankato.
- Target using travel time raster
- Target implementation of wetlands to increase storage
  - See targeting for wetlands issue
- Target utilizing MOSM (management option simulation model) for cost effectiveness of practices in the uplands, transitional, and incised zones under management scenarios
  - Steering Team: Need further tutorial and background on MOSM tool if used for prioritization and targeting
- ACPF results to target site specific locations
- PTMApp results to target site specific locations

Strategies: (high priority strategies provided by TAC are bolded)

- Capital Improvement Projects (CIP) for watershed associated with storage
- Storage
  - Wetland restoration, enhancements, banks, and constructed wetlands
  - Passive CREP/RIM wetland restorations for full restoration
  - In channel or in ditch storage (that does not limit fish migration)
  - Strategic culvert placements and sizing with consideration for aquatic organism passage for maintaining/enhancing biologic integrity
  - Storage basins
  - Levee removal and/or boring through levees for floodplain connectivity
  - Natural channel restoration with floodplain connection in upper watershed
  - Restoring floodplain connections
  - Restoring channelized streams for floodplain connectivity
  - **WASCOBs** – specific design to maximize storage with office restrictions for 24–36-hour storage periods
  - **Farmable storage areas** – allows draw down and at risk farmability when dry and temporary storage during rain events. This design currently does not fit within NRCS practice standards but has been more well received by private landowners.
    - Easement payments for water storage using a CIP

- Increase soil moisture potential - **soil health**
  - Cover crops
  - Perennial cover
  - Reduced tillage (strip till or no-till)
- **Conservation drainage management & early coordination with drainage projects**
- **Urban stormwater storage** (example – New Richland and Faribault County are trying to address the capacity issues with urban implementation)
  - Permeable pavers
  - Rain gardens
  - Stormwater ponds or filtration basins
  - Other green infrastructure
- Outreach and Education
- Resiliency planning
- Infiltration and groundwater recharge

Memorandum
Le Sueur River One Watershed One Plan

ISSUE #5: WETLANDS

Issue Statement: A significant loss of wetlands and wetland function from historical ditching, drainage, and land use change

Desired Future Conditions:

- Restoration of wetlands to restore upland water storage capacity that mitigates downstream erosion issues and flooding issues
- No loss of existing wetlands
- Public is aware of and follows existing wetland regulations
- Wetland habitat is restored and enhanced

Measurable Outcome:

- Install or restore 1,807 acres of wetlands

Targeting:

- Landscape/Physical Conditions:
  - Target upland areas that drain to known bluff erosion sites in downstream areas of watershed.
  - Target areas with historic wetlands/hydric soils
  - Target marginal cropland
  - Target locations based on travel time raster data
  - Target depressional areas identified in DEM analysis where available
  - Target projects with largest storage potential
  - Target wetland restorations on any drainage project that is initiated.
  - Target willing landowners
  - Hansen Study – target wetland restoration along river and drainage corridors. It's the most cost effective for implementing storage, TSS reductions, and N reductions that encourages multiple benefits
  - Also target wetlands to habitat corridors and/or areas where multiple benefits result (would need to define habitat corridors
  - Locations of existing wetlands - protection
- Tools:
  - Targeting using the Restorable Wetland Prioritization Tool
  - Target utilizing MOSM (management option simulation model) for cost effectiveness of practices in the uplands, transitional, and incised zones under management scenarios
  - Target areas that provide greatest multiple benefit by addressing other priority issues for pollutant reduction and cost effectiveness using HSPF-SAM
  - ACPF results to target site specific locations
  - PTMApp results to target site specific locations

Strategies:

- Restore wetlands focused on achieving storage
- Restore wetlands focused on water quality
- Wetland habitat restoration
- Outreach and Education
  - Include specifics regarding local and downstream benefits as well as existing regulations/laws.
- Need technical assistance to help with preliminary steps of wetland banking and understanding the overall process
- Influence policy to address gap in existing programs for drained or partially drained wetlands that do not have sufficient crop history for CRP or RIM through established associations

ISSUE #6: LEADERSHIP

Issue Statements:

A lack of technical understanding amongst decision makers and public related to issues and strategies for protection of surface water, groundwater quality and quantity, and drinking water.

A lack of implementation of multipurpose drainage management practices.

The implementation of voluntary best management practices has not met the level of adoption needed to meet watershed goals.

Desired Future Conditions:

- All citizens and decision makers are aware of surface water and groundwater concerns and include sustainable alternatives in decision making that exceeds levels needed to meet goals.

Measurable Outcome:

- Meet with local decision makers annually (or more frequently as appropriate) to provide educational information on upcoming projects [10 meetings]
- Conduct one (1) outreach effort to citizens each year, focused on a specific surface or groundwater concern. Effort should include a variety of outreach components including but not limited to social media, mailings, newspaper articles or press releases, and open mic programs on local radio stations.

Targeting:

- Watershed Wide
- Education and outreach to target priority issues
- Education and outreach to target priority areas and resources
- Education and outreach to target areas / communities
- Education and outreach to target elected officials and decision makers.

Strategies:

Outreach and Education

- Watershed-wide initiatives
  - Conduct one-on-one landowner outreach with landowners with implementation opportunities.
  - Increase adoption of voluntary best practices and support adaptive management to improve soil health with farmer-led, field scale demonstrations and monitoring
  - Increase awareness and participation from city officials, county commissioners, farmers, lake associations, and other stakeholders in conservation and efforts towards achieving goals
  - Identify and support leaders in the farming community to increase farmer led demonstrations, promotion of practices, and field days
  - Develop public-private partnership to optimize opportunities
  - Develop ag-urban partnerships to optimize opportunities
  - Conduct social science research to better understand barriers to implementation with focus on storage, wetlands, and soil health
  - Hold forums, workshops, and events to promote watershed improvement efforts, opportunities, and highlight success stories
  - Develop educational resources to distribute through website, newsletters, or events.
  - Develop or improve online location for CWMP and ability for landowner inquiry and citizen involvement

  - Promote Minnesota Ag Water Quality Certification Program
  - Promote Clean Water Land and Legacy sales tax amendment in 2034
- Water Organizations
  - Increase collaboration between jurisdictional boundaries within larger watershed groups such as GBERBA
  - Increase membership, participation, and collaboration with the Le Sueur River Network, lake groups, and other conservation groups
- Lakes
  - Increase DNR Score Your Shore use and knowledge
  - Increase participation and number of volunteer lake groups or associations
- Drainage
  - Promote MDM and inclusion of conservation and soil health practices through drainage projects
  - Collaborate with Drainage Authorities where sediment reductions are common goals
  - Promote buffers and native vegetation
- Wetlands and Water Storage
  - Conduct outreach and education on existing wetland laws to prevent violations
  - Promote Minnesota's Wetland Bank
  - Develop partnerships with conservation groups such as Pheasants Forever and Ducks Unlimited and collaborate with FSA, NRCS, BWSR, DNR, and other state and federal agencies
- Groundwater
  - Host well sealing clinics
  - Promote adoption of practices for groundwater protection including manure management, nutrient management practices such as cover crops, pesticides, SSTS, etc.
  - Promote testing of private wells testing for all contaminants (coliform bacteria, nitrate, arsenic, lead, and manganese)
  - Conduct outreach and education on treatment options if contaminates are detected
- Erosion and Soil Health
  - Support development of county level, citizen led Soil Health Teams and peer-to-peer learning
  - Conduct one-on-one landowner outreach with landowners in priority areas
- Urban
  - Promote green infrastructure and urban BMPs in urban projects such as road reconstructs and developments.

Technical Assistance

- Hire staff and maintain existing staff
- Complete trainings and workshops to build staff capacity
- Increase staff with Joint Approval Authority (JAA) to build staff capacity
- Provide funding for survey, planning, engineering, and construction administration.
  - Provide technical assistance on Minnesota's Wetland Banking

Funding

- Promote and educate landowners on grant opportunities and cost share programs
- Collaborate with Drainage Authorities on grant opportunities and leverage benefitted watersheds for grant match funding
- Support GBERBA in larger watershed grant initiatives
- Hold fundraising events
- Partner with cities, conservation groups, private industries, and others for funding opportunities
- Investigate emerging funding opportunities such as nutrient trading and carbon markets

ISSUE #7: BACTERIA

Issue Statement: Streams are impaired due to high E. Coli (bacteria) levels in surface waters.

Desired Future Conditions:

- All rivers and streams meet applicable bacteria (fecal coliform and E.coli) water quality standards

Measurable Outcome:

- Conduct a minimum of 30 one on one outreach efforts to promote manure management BMPs in coordination with feed lot compliance inspections and to increase voluntary adoption of manure management plans.
- Replace 45 SSTS

Targeting:

- Land use practices in drainage areas of streams impaired for E.coli
- Feedlots/grazing pastures
    - Prioritize feedlots under 300 AU's located close to surface waterbodies
    - Areas with manure applications
- Fresh sources of bacteria
- Failing SSTS
- Septics of unknown status
- Urbanized areas with potentially high pet waste runoff

Strategies:

- Bacteria source assessment
- Incentivize the voluntary adoption and implementation of Manure management plans
- Adhere/increase application setbacks
- Improve feedlot runoff control
- Rotational grazing and livestock exclusion
- Replace failing SSTS
- Analyze impact of WWTP untreated/emergency releases
- Reduce untreated/straight pipe residential discharges
- Education and outreach on pet waste management
- Outreach and education on feedlot management and manure applications
- Outreach and education on maintenance on septic systems – target landowners, renters, lake residents

Memorandum
Le Sueur River One Watershed One Plan

ISSUE #8: RIPARIAN + SHORELANDS

Issue Statement: A reduction in quality and quantity of riparian and shoreland habitat.

Desired Future Conditions:

- All shorelands and riparian zones provide healthy habitat.

Measurable Outcome:

- Restore 700 linear feet of lake shoreland and complete 4 streambank stabilization projects
- 7,570 acres of expanded perennial cover along lakeshore, river corridors, and private and public ditches

Notes for Narrative:

- Ensure clarification between aquatic habitat and upland habitat and/or general habitat.

Targeting:

- Targeting for lakeshore on priority lakes determined from Water Quality in Lakes Issue
- Targeting for shoreland on priority watercourses determined from Water Quality in Rivers and Streams Issue.
- Target protection in critical habitat corridors
    - Potentially layering different locations for important habitat considerations for maintaining existing areas and priority areas for habitat creation. Layering could include but is not limited to:
        - USFW easements
        - RIM or other wetland easements
        - WMAs
        - Parks or other recreational areas
- Target riparian enhancements in subwatershed with impacts of altered hydrology. Altered hydrology is the primary cause of degraded habitat, changes in connectivity, timing and amount of flow though instabilities vegetation loss, and reduction in floodplain connectivity.
- Target locations to protect infrastructure such as roads, house, etc.
- Target identified areas where there is a need for additional native perennial cover along lakeshore, river corridors, and private and public ditches

Strategies: (high priority strategies provided by TAC are bolded)

<u>Lakeshore Strategies</u>

- Shorelands
    - Shoreland restoration
    - Shoreland enhancements
    - Native planting and conservation cover
    - Buffers
- Ordinances/Policy/Enforcement
    - Comparison study of ordinances/policies/enforcements
    - New development practices
    - Land protection of critical habitat areas
- Outreach & Edu

<u>River & Riparian Strategies</u>

- **Buffers**

  - Buffer installation – private and public ditches
  - Buffer compliance process enhancements
  - Buffer expansions
  - Buffer maintenance
- Ordinances/Policy/Enforcement
  - Comparison study of ordinances/policies/enforcements
  - New development practices
- Riparian restorations
- Ditch or streambank re-sloping
- Land protection of critical habitat areas

Non-structural Strategies

- Outreach and education
  - Lakeshore and riparian landowners on best practices and management of shorelands
  - Coordination with lake associations best practices and management of shorelands
  - Education to elected officials on importance of the near shore and riparian vegetation and protection
  - Support volunteer lake groups (funding for projects, cost share, research, education, outreach, lakeshed planning)
  - Increase participation in lake association
  - Increase number of lake associations or lake groups
  - Increase collaboration between lake groups and conservation partners
  - Target outreach to lakeshore and riparian owners
  - Increase knowledge of DNR Score Your Shore
- Assessments with GIS and modeling tools to target locations and opportunities at subwatershed scale

Memorandum
Le Sueur River One Watershed One Plan

ISSUE #9: DRINKING WATER AND GROUNDWATER PROTECTION

Issue Statement: Elevated contaminants in groundwater, particularly nitrates and arsenic, are an ongoing threat to drinking water quality and public health.

Desired Future Conditions:

- All private well owners are aware of nitrate, arsenic and manganese, its threats to their health, if it's detected in their water, and opportunities to treat it if present.
- All unused and unsealed wells within planning area sealed
- All SSTS operate as designed, meet compliance, and are maintained
- Eliminate leaky tank sites
- Reduce impacts of elevated nitrates to Mankato's shallow drinking water wells

Measurable Outcome:

- Public Water Systems
  - 30 unused/abandoned wells are sealed within DWSMA boundaries
  - Nitrate + Nitrite loads at the Le Sueur River outlet are reduced by 254,000 pounds per year (2% reduction)
  - Cover crops or other living cover in medium or highly vulnerable DWSMAs encompass 80% (approximately 80 acres) of cropland acres.
  - 1,500 acres of cover crops in Mankato's Surface Water DWSMA
- Private Wells
  - 296 unused or abandoned wells are sealed
  - 45 septic systems are replaced to meet compliance
  - 10% of cropland acres implementing cover crops in moderate to highly sensitive well areas

Targeting:

- Public Water Systems
  - Locations of failing SSTS, unsealed wells, feedlots, active leaky tank sites, and agriculture in moderately vulnerable DWSMA's
  - Locations of unsealed wells in low and very low vulnerable DWSMA's
  - Areas of the watershed that contribute high nitrogen loads to Le Sueur river outlet
  - Mankato's Surface Water DWSMA boundary
- Private Wells
  - All private wells are a priority with an immediate priority put towards:
    - Target based on a geology (wells finished in glacial drift)
    - Areas with medium and high pollution sensitivity of near surface materials of wells and karst areas.
    - Ensure older wells are getting tested and not just newly installed wells.

Strategies:

- Public Water Systems
  - Seal unused wells
  - Manage feedlots and manure
  - Repair/address leaky tank sites
  - BMPs to reduce nitrogen leaching such as cover crops
  - BMPs to reduce nitrogen loads
- Private Wells
  - Outreach and education on need to test for all contaminants, particularly arsenic
  - Outreach and education on options to treat arsenic if detected

- BMPs to reduce nitrogen leaching such as cover crops
- Repair or replace failing SSTS
- Manage feedlots and manure
- Seal unused wells ← this may be better use of time and money than conducting well inventories - this is difficult to do
- Pesticide Management strategy
- Promote to farmers and area businesses the Agricultural and Non-Agricultural Waste Pesticide Collection Program to dispose of unwanted and unusable pesticides. ← From GRAPS
- Provide free well/drinking water testing days

Data Sources:

- GRAPS & City of Mankato 2021 Source Water Assessment

E

APPENDIX E: BMP DETAILS + COST ASSUMPTIONS

E

APPENDIX E: BMP DETAILS + COST ASSUMPTIONS

Introduction

Cost estimates are presented in 2022 value and will be updated to reflect the current costs during the development of the annual work plan. Unless otherwise noted, on-the-ground implementation actions include the costs for:

- Project specific technical assistance
- Basic outreach efforts
- Design
- Permitting
- Easements
- Landowner contribution
- Other direct project related costs

Table E.1: BMP Cost Assumptions

Practice	Units Implemented	Cost per Unit Implemented	Cost period	Acres Treated per Unit Implemented	Notes about Treatment Ratio
Cover crops (EQIP 340)	Acres	$140.00	Yearly for 3 years from First year of Implementation	1	Treated acres are equal to Implemented acres
Conservation Tillage - Includes both no till (EQIP 329) and strip till with high residue (EQIP 345)	Acres	$75.00	Yearly for 3 years from First year of Implementation	1	Treated acres are equal to Implemented acres
Conservation Crop Rotation - Adding a third crop to rotation of corn and soybean (EQIP 328)	Acres	$140.00	One time	1	Assumed same cost as cover crops
Grassed Waterway	Linear feet	$8.00	One time	0.08	Assume a grassed waterway is 50ft wide and 300ft long (15,000ft2) that treats an area of 1,045,000ft2 (24 acres). Therefore one linear ft of grassed waterway treats 0.08 acres.
Water and sediment control basins (WASCOBs) and Terraces	Project	$15,000.00	One time	10.8	Assume 10 acres of cropland treated per WASCOB

Table E.1: BMP Cost Assumptions

Practice	Units Implemented	Cost per Unit Implemented	Cost period	Acres Treated per Unit Implemented	Notes about Treatment Ratio
Ponds, impoundments, and other engineered water storage practices - Structures solely focused on providing water storage	Acre-feet of water storage	$8,000.00	One time	NA	Assume one project achieves 5 acre-ft of storage
Wetland Restoration (EQIP 657) - Follow prioritization in plan to direct selection of primary wetland restoration function (storage, water quality, habitat).	Acres	$15,250	One time	10.8	Assume 50 acres of existing cropland can be treated by 4.6 ac of wetland (1 ac pool + 3.6 acres of buffer)
Perennial Cover - Establishing perennial cover in priority areas identified in the plan. This includes areas adjacent to existing high-quality habitat areas, riparian areas, critical area plantings on Highly Erodible Land (HEL), etc.	Acres	$600.00	One time	1	Treated acres are equal to Implemented acres
Alternate Tile Intakes	Project	$1,500.00	One time	44	Assume one project treats 44 acres
Alternate Side Inlets	Project	$4,500.00	One time	44	Assume one project treats 44 acres
Grade Stabilization (riparian) - Grade stabilization structures adjacent to streams in the riparian corridor to stabilize gully's.	Project	$12,000.00	One time	NA	Count of projects implemented

Table E.1: BMP Cost Assumptions

Practice	Units Implemented	Cost per Unit Implemented	Cost period	Acres Treated per Unit Implemented	Notes about Treatment Ratio
Conservation Drainage Management - Tile line bioreactors (EQIP 747)	Acres	$30,000.00	One time	80	Assume one project treats 80 acres
Conservation Drainage Management - Saturated Buffer	Acres	$16,000.00	One time	44	Assume one project treats 44 acres
Conservation Drainage Management - Controlled tile drainage (drainage water mgmt - 554)	Project	$2,500.00	One time	80	Assume one project treats 80 acres
In Channel/in ditch storage - Utilizing water control structures or culverts to provide base flow storage while ensuring it does not limit fish passage.	Project	$150,000.00	One time	NA	Count of projects implemented
Nutrient Management Plan - Establishment of a Nutrient Management Plan that meets all requirements of EQIP 104. Implementation is dependent on success of outreach and eduction efforts.	Plan	$3,500.00	One time	NA	Count of plans established

Table E.1: BMP Cost Assumptions

Practice	Units Implemented	Cost per Unit Implemented	Cost period	Acres Treated per Unit Implemented	Notes about Treatment Ratio
Farmable Storage Areas - Areas adjacent to streams that are more likely to flood or pond water that would be incentivized to be left as storage during wet years but could still be farmed in dry years. Implementation will be dependent on outcomes of feasibility study.	Project	$10,000.00	One time	NA	Count of projects implemented
Stream Restorations - Applying nature-based engineering solutions to stabilize stream channels, reconnect incised channels to the floodplain, and increase habitat . Specific location and scope of practice will be determined following the completion of the feasibility studies.	Project	$100,000.00	One time	NA	Count of projects implemented
Grade Stabilization (ravine) - Stabilization structures for ravines in the Minnesota River valley	Project	$40,000.00	One time	NA	Count of projects implemented

Table E.1: BMP Cost Assumptions

Practice	Units Implemented	Cost per Unit Implemented	Cost period	Acres Treated per Unit Implemented	Notes about Treatment Ratio
Lakeshore Restorations - Restoring lakeshore areas with nature-based engineering approaches and establishment of native vegetation and buffers. Specific location and scope of practice will be determined following the completion of the feasibility studies.	Linear feet	$100.00	One time	NA	Count of linear feet implemented
In-Lake Biomanipulation - Active management of undesired fish communities to reduce algal production in eutrophic lakes. Will only be pursued if feasibility studies identify as an effective approach.	Project	$40,000.00	One time	NA	Count of projects implemented
Lake Alum Treatments - Reduces internal phosphorus loading. Will only be pursued if feasibility studies identify as an effective approach.	Project	$10,000.00	One time	NA	Count of projects implemented
Lake Vegetation Management - Treatment or removal of invasive and nuisance aquatic vegetation. Will only be pursued if feasibility studies identify as an effective approach.	Project	$1,000.00	One time	NA	Count of projects implemented

Table E.1: BMP Cost Assumptions

Practice	Units Implemented	Cost per Unit Implemented	Cost period	Acres Treated per Unit Implemented	Notes about Treatment Ratio
Permeable Pavers - Stormwater management to reduce impermeable surfaces.	Acres	$440,000.00	One time	2	Assume 2 acres treated per 1 acre of implemented area
Bioretention (Rain Gardens)	Acres	$2,500.00	One time	24	Assume a typical rain garden has an implementation area of 0.2 acres and treats 5 acres
Well sealing	Wells	$2,700.00	One time	NA	Count of private wells sealed
Septic system upgrades	Septic systems	$20,000.00	One time	NA	Count of septic systems upgraded
Water Conservation of Free Flowing Wells - Installation of a flowing well spool underground discharge unit and corresponding pressure tank system to conserve water in free flowing wells.	Project	$8,500.00	One time	NA	Count of projects implemented

F

APPENDIX F: KICKOFF MEETING AND SURVEY SUMMARIES

F

APPENDIX F: KICKOFF MEETING AND SURVEY SUMMARIES

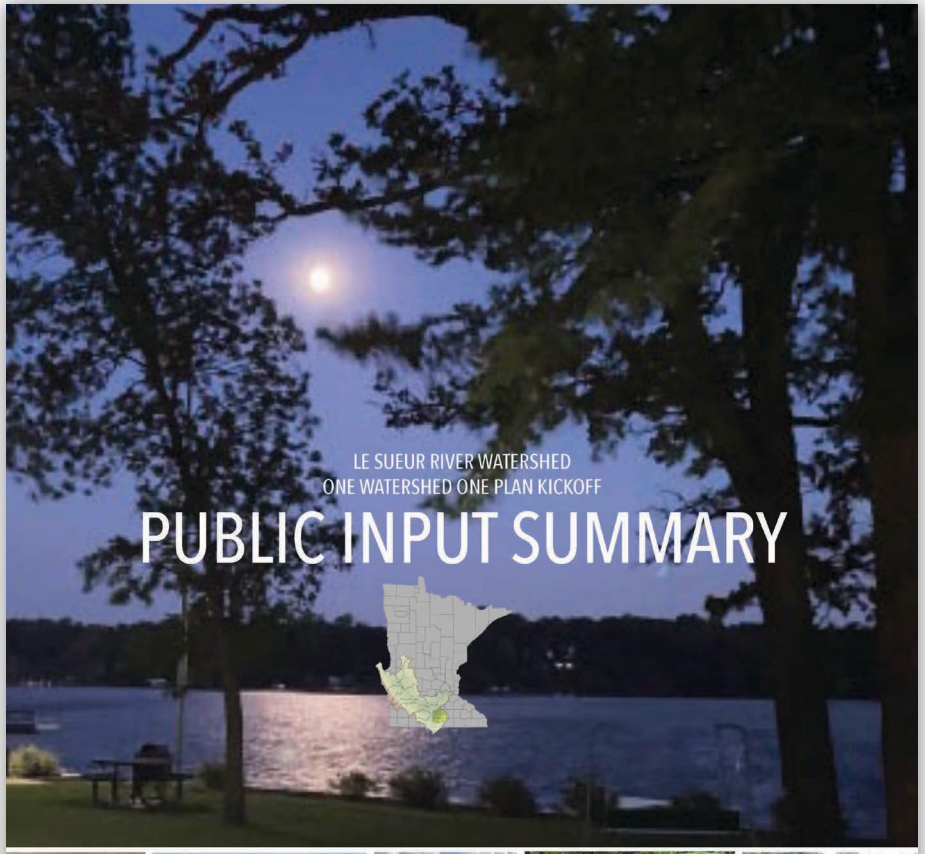
Introduction

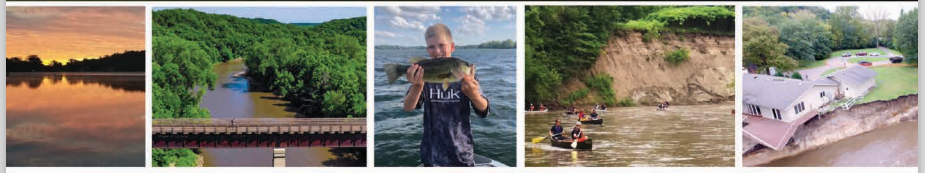
The public kickoff meeting was held on September 16th, 2021, at the St. Olaf Lake Park in New Richland, Minnesota with approximately 60 attendees. The meeting was planned and hosted by the Water Resources Center (WRC) of Minnesota State University, Mankato. The primary purpose of the public kickoff meeting was to provide an opportunity for the public and interested stakeholders to provide insight and guidance on water resource issues of concern and importance.

Due to lingering impacts from the COVID-19 pandemic, the public and stakeholders were also provided an online survey option to participate in the process.

Both in-person and online survey summaries are provided in this appendix.

Check out this information online!
bit.ly/appendixF_LSRW





One Watershed One Plan

Le Sueur River Watershed

Le Sueur River Watershed
One Watershed One Plan - Planning Partnership

The Le Sueur River Watershed One Watershed One Plan (1W1P) planning partnership includes Blue Earth County, Blue Earth Soil and Water Conservation District, Waseca County, Waseca Soil and Water Conservation District, Faribault County, Faribault Soil and Water Conservation District, Freeborn County, and Freeborn Soil and Water Conservation District.

The kickoff public engagement was planned, facilitated, and summarized by the Water Resources Center at Minnesota State University, Mankato for the 1W1P planning partnership.

WRC
WATER RESOURCES CENTER
MINNESOTA STATE UNIVERSITY, MANKATO

One Watershed One Plan

One Watershed One Plan

This document summarizes public engagement that is part of the planning process for Le Sueur River Watershed One Watershed One Plan (1W1P) development. Learn more about 1W1P by visiting BWSR's website: https://bwsr.state.mn.us/one-watershed-one-plan

Le Sueur River Watershed
One Watershed One Plan Website

Learn more and follow plan updates posted on the 1W1P website: https://www.co.waseca.mn.us/438/LeSueur-River-One-Watershed-One-Plan

For More Information

1W1P Questions?
Contact Waseca County Planning & Zoning at 507- 835-0615 or Haley.Byron@co.waseca.mn.us

Kickoff Meeting Questions?
Contact the Water Resources Center, Minnesota State University, Mankato at 507-389-5492 or Kimberly.Musser@mnsu.edu
More detailed public summary information is available upon request.

November 2021

CLEAN WATER LAND & LEGACY AMENDMENT

GATHERING PUBLIC INPUT

Background

This report is a summary of a public engagement component of the Le Sueur River Watershed, One Watershed One Plan (1W1P) planning effort. An initial step in the process for developing the Le Sueur River Watershed 1W1P is to host a public kickoff meeting to listen and learn from watershed residents and stakeholders. The main objective of the public engagement effort is to give residents and stakeholders the opportunity to provide input and identify important issues and concerns related to watershed health. As part of the Le Sueur 1W1P process, project partners will invite watershed residents to provide input on the plan at two public meetings—the kickoff and a mid-point meeting. This document summarizes public feedback from the kickoff meeting and online survey.

Kickoff Meeting

A public kickoff meeting was held September 16, 2021 at St. Olaf Lake Park near New Richland, MN. The meeting was designed to provide information about the planning process and the watershed and to collect information from watershed residents that will help frame issues and shape planning efforts. The kickoff meeting began with a welcome by planning partners and an overview of the 1W1P process. Participants learned about watershed health and water quality from Minnesota Pollution Control Agency staff. Minnesota Department of Natural Resources staff provided an overview of river flows, climatic trends, and groundwater trends. Approximately 60 people attended representing diverse communities and viewpoints from across the watershed.

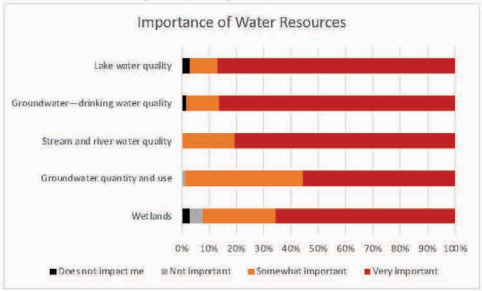
The bulk of the meeting centered on facilitated small group conversations where participants discussed the following questions:

- *What do you value and care about when it comes to your community and the natural environment?*
- *What would you like to preserve for future generations?*
- *What concerns do you have about area natural resources and the community?*
- *Are there specific watershed areas or water bodies (lakes, rivers, wetlands) that you are concerned about?*
- *What strategies would you suggest to improve watershed health and community vitality?*

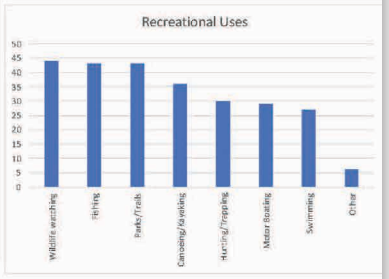
Online Survey

Due to the covid pandemic, an online survey was also developed to reach those who preferred to weigh in online. An online survey was developed in collaboration with planning partners to gain citizen input about watershed issues and priority resources. The survey design conveyed the same questions asked at the kickoff meeting. The 17-question survey included both open and closed-ended questions to gain general input about citizen perspectives. There were 68 survey respondents, primarily rural residents and farmers from Blue Earth and Waseca Counties.

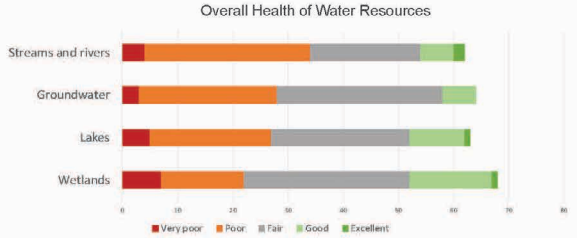
How important are each of the following water resources to your quality of life?



Do you participate in any of the following activities or use the natural areas (lakes, ponds, wetlands, streams, rivers) in the Le Sueur River Watershed?



How would you rate the overall health of water resources in your area/community?



VALUE

What do you value and care about when it comes to water resources and the natural environment in the Le Sueur River Watershed? What would you like to be preserved for future generations?

Natural environment

Participants highly value the natural environment, vibrant communities, and rural character across the watershed. A central topic raised was the importance of preserving the natural ecosystem and environment. There was a strong interest in maintaining good recreational opportunities to fish, hunt, and paddle while stressing the importance of access and healthy wildlife populations. Preserving natural areas and the feeling of being "in the wild," and maintaining a healthy landscape were highly valued.

- *I would love to preserve the lakes and streams so that future generations can enjoy good fishing, swimming and other recreational activities.*
- *Provide habitat for wildlife and native plants so that natural ecosystems can thrive. I want future generations to be able to fish, see monarchs, and enjoy natural lands.*

Surface water quality

Water quality was another central focus, particularly an interest in cleaner water, decreasing sediment and nutrient pollution and not sending excessive sediment levels downstream.

- *I value water quality. I think that it's possible to improve water quality in the Le Sueur River Watershed through wetland restoration and increased adoption of perennial crops in sensitive areas.*
- *Wetland preservation is important to water quality and maintaining buffer strips along public waterways provides habitat and improves water quality.*
- *I would like to see our lakes preserved; more specifically, limiting the impact of invasive species, maintaining good water quality, and limiting additional shoreline development.*
- *Restoring wetlands, seeding prairies, and storing water on the landscape like it had been in the past will help with water quality, habitat, and flooding of communities.*

Healthy agricultural lands and vibrant communities

Many participants discussed the importance of preserving agricultural lands and finding a balance between agricultural production and natural areas.

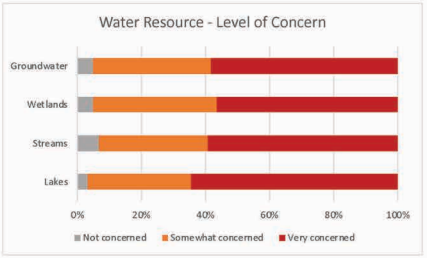
- *I want our topsoil and nutrients to stay where they are so that they can be an asset to us, instead of washing downstream and being a liability for someone else.*
- *We need to make sure that there is land and land use that provides for my family to live and grow at home in this watershed.*
- *I want our farmland preserved for future generations so we can all eat food. Traditional BMPs should be fully supported and properly located.*
- *Small towns are not what they used to be with fewer families in the area. Resources are taken out of the land, sent elsewhere and we are left with the loss. I would like to see some of that come back and an interest in sustainability.*

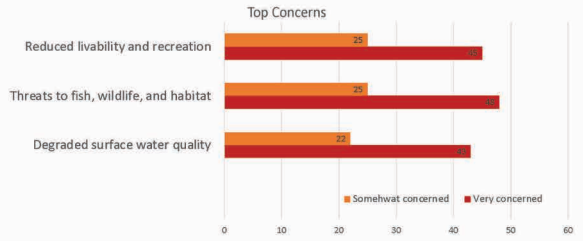
Groundwater and drinking water

Many valued maintaining groundwater supplies and access to high quality drinking water.

- *Drinking water is the most important resource.*
- *Fortunately, we have good drinking water quality in the watershed for the most part. This needs to be protected and preserved.*

How concerned are you about the health of area water resources?





CONCERNS

What concerns do you have about area water and natural resources in the Le Sueur River Watershed today? What issues related to rivers, lakes, or groundwater do you think should be addressed?

Surface water quantity - Increasing flows and flooding

Flooding and increasing peak flows were one of the central concerns discussed. Many participants focused on how to manage flooding and erosion, discussing how to slow flows and store water.

- *I'm concerned about communities flooding and worried about flashy flows and flooding downstream.*
- *My top concern is increased flows due to farm drainage and urban influences.*
- *The watershed is a fragile one that is deteriorating rapidly. Largely uncontrolled drainage practices and lack of water storage have created a highly dysfunctional hydrology.*
- *Higher peak flows are causing more streambank, ravine, and bluff erosion. We need to store water to reduce peak flows.*

Degraded surface water quality

Water quality was another major topic of discussion, particularly concerns about elevated sediment, nutrient (phosphorus, nitrate) and bacteria levels. Participants were also interested in better understanding human health impacts – Can you swim and fish safely? Which waters are impaired?

- *The water quality in our rivers, streams and lakes is deteriorating rapidly. We need to address these issues to help reverse the decline in the quality of the water in the watershed.*
- *I would like my children and grandchildren to be able to fish in lakes and rivers that aren't green.*

Degraded natural environment

Many expressed concern about reduced livability and recreational opportunities as well as threats to fish and wildlife habitat.

- *I have seen wildlife and natural scenery on the landscape decline steadily since I was a kid.*

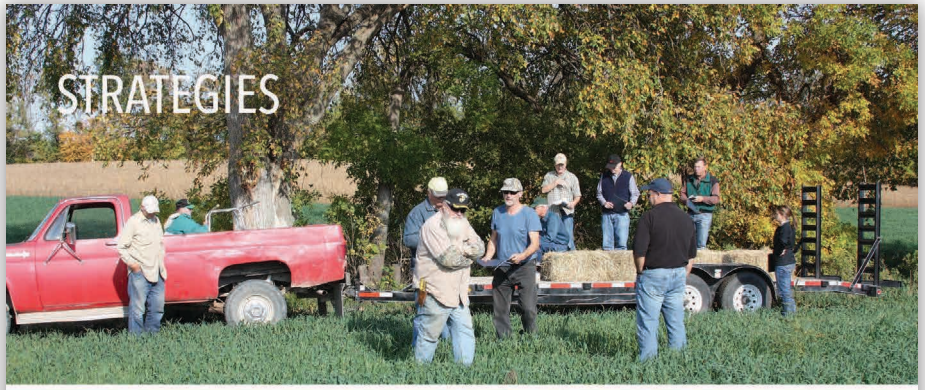
Land Management - Balancing agriculture and natural areas

Participants noted that the farm economy is essential to the Le Sueur River Watershed and expressed concern about land use and development that impacts natural resources and habitat, noting riparian areas in particular. Many groups discussed management issues–such as lack of BMP funding, need for improved government coordination and communication, and less paperwork. Groups also discussed fear of future regulation and conflicting values.

WATERSHED AREAS

Are there specific watershed areas or water bodies (lakes, rivers, wetlands) that you are concerned about? Please specify below.

Watershed areas discussion centered on lakes. Madison, Bass, Elysian, Freeborn, Rice, Loon, St. Olaf, Alice, Clear, Reeds and Lura were focused on. Participants noted that the entire Le Sueur River watershed needs attention. Others emphasized focusing work in specific subwatersheds: Bull Run, Iosco Creek, Rice Creek, Cobb River, and Indian Creek were mentioned in particular. Targeting discussions included areas that are experiencing flooding or where there is potential bluff failure. Participants also talked about opportunity areas for water storage, such as drained or altered wetlands, lower production or marginal crop lands, and increased usage of cover crops and soil health practices. Some participants suggested focusing on DNR stream stability sites and on lakes and streams that are "nearly/barely" impaired.



WATERSHED STRATEGIES

What strategies do you think will help to improve watershed conditions? (Examples include: water management on agricultural or urban lands, riparian areas, lakeshore management, conservation cover, wetlands, groundwater protection, soil health etc.)

Best management practices (BMPs)

Wetlands, soil health and cover crops, and maintaining buffer strips along rivers and lakes were the most commonly discussed best management practices (BMPs). Alternative side inlets, grade stabilization, waterways and terraces were also specifically mentioned BMPs. Participants also discussed the need for improved shoreland management, addressing dead trees along rivers, and sealing wells to protect groundwater. The need for more technical assistance was raised as a concern.

Water storage

Many group conversations centered on water storage strategies such as wetland restorations, particularly finding historic lake basins to restore, as well as connecting water storage to drainage systems and tiling. Citizens also talked about the need for increasing perennialization and providing incentives for permanent cover.

- Funding to increase water storage and wetlands should be the number one priority.
- Practices that lower peak flows and water volume in rivers; wetland restorations have multiple benefits.
- We need water storage in drainage districts. Look at the systems and incorporate water storage in all drainage projects.

Soil health

The need for soil health practices, reducing tillage, increasing cover crop adoption, was widely discussed as well as the benefits of integrating grazing.

- *We need water storage through soil health.*
- *Put a bunch of time and effort and money getting a market for small grains in the area followed by funding for cover crops and watch the soil and water quality improve exponentially.*

Lakeshore management

Improved lakeshore management and effective filtering of incoming tile lines were discussed as well as maintaining buffers and installing terraces. Concern about groundwater and need for septic updates and maintenance was also raised.

COORDINATION STRATEGIES

What research, coordination, funding and policy strategies do you think will help to improve watershed conditions? (Examples include: data collection, monitoring, coordination and collaboration, technical assistance, local, state or federal policies, conservation programs, funding etc.)

Improved coordination and collaboration

Citizens talked about the need for improved coordination, collaboration, and cooperation among all partners as well as needing continuity for a sustained effort.

Funding and cost share

Participants discussed the need for more funding and cost share to "help get landowners to do the right thing." Supporting existing cost share and conservation programs was noted as a priority, particularly voluntary cost share programs with flexibility. Respondents wrestled with the voluntary approach versus regulation and enforcement and some suggested a mixture of voluntary and required practices.

- *Anything that will financially help the landowner to change or implement a conservation practice.*
- *Continue to have short term ag land retirement (CRP) and permanent (RIM) options available. Working lands strategies that are economically viable (break even) or provide competitive edge (profitable).*
- *Unfortunately, unless there is monetary compensation most people will do little. Regulation is the only real way to improve.*
- *Regulation and compensation, in that order, will be the only way to make a measurable impact in the watershed.*

Programs

Discussions centered around the need for policies and programs to support watershed health, particularly focusing on water storage and soil health programs. For new programs, they suggested working at both the state and federal level, noting the need for political pressure. There was a particular interest in addressing flooding and riverbank erosion and protecting lakes. In terms of prioritizing and targeting, participants suggested focusing on specific water bodies that are priorities for the most people and for projects that will have the greatest impact for reducing pollution.

- *More funds should be funneled into water storage practices.*
- *Funding to increase water storage and wetlands should be the number one priority.*
- *Fund projects that are cost effective and have multiple benefits. like water storage, habitat/pollinators, and water quality.*
- *I'd like to see an increased effort for water retention on drainage projects. Funding has been an issue, along with willing participants.*

Education and outreach

Participants discussed the need for more education and outreach to increase communication about watershed issues and "to have the public care about resources." "We need to figure out how to reach a larger group of people." Respondents discussed targeting absentee landowners, agricultural groups and K-12 students. Demonstrations, self-guided tours, and online data were effective engagement routes to consider.

- *Education is critical. Educating landowners on the requirements, best practices and potential funding will improve participation.*
- *Education followed by cost-share policies to help get landowners to do the right thing.*
- *Active outreach and advertising should be targeted to priority areas or priority practices that have the best return on public investment.*

Research

Research needs were also discussed. Numerous participants noted that we should first look at and use existing research, particularly the Collaborative for Sediment Source Reduction (CSSR) study. Some expressed an interest in additional funding for research, monitoring and data collection, as well as following up to explain research findings to the public.

- *Pay close attention to the findings of CSSR project and [University of Minnesota] professor Dave Mulla's work. The CSSR project developed a spreadsheet quantifying flow reductions to water storage and land use practices in the Le Sueur.*

LE SUEUR RIVER WATERSHED
ONE WATERSHED ONE PLAN PUBLIC KICKOFF MEETING

September 16, 2021 - 6:00-8:00 p.m. Complimentary Refreshments
St. Olaf Lake Park 17500 240th Avenue, New Richland, MN (4.5 miles NE of town)

One Watershed One Plan

JOIN THE CONVERSATION ABOUT THE FUTURE OF THE WATERSHED

Learn about the watershed planning process that is just starting in the Le Sueur–the One Watershed One Plan (1W1P). You'll have the opportunity to learn about the watershed and informally discuss issues with watershed neighbors and local and state conservation partners. This planning effort is part of a statewide initiative to create a watershed-wide, science-based approach to water resource management. The plan will guide watershed planning and implementation over the next ten years.

Le Sueur River Watershed

YOUR INPUT IS NEEDED

Watershed partners want to learn from residents about your priorities and concerns.
What do you value about local water resources?
What river, lake and groundwater issues are important to you?
What do you think are the major issues or concerns with area rivers and lakes?
What watershed improvement strategies can address these challenges?

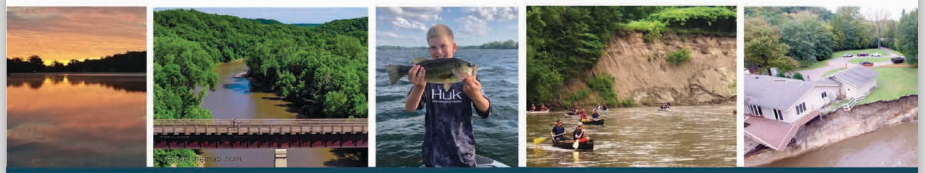
WATERSHED PARTNERSHIP

The Le Sueur River Watershed planning partnership includes Blue Earth County, Blue Earth Soil and Water Conservation District, Waseca County, Waseca Soil and Water Conservation District, Faribault County, Faribault Soil and Water Conservation District, Freeborn County, and Freeborn Soil and Water Conservation

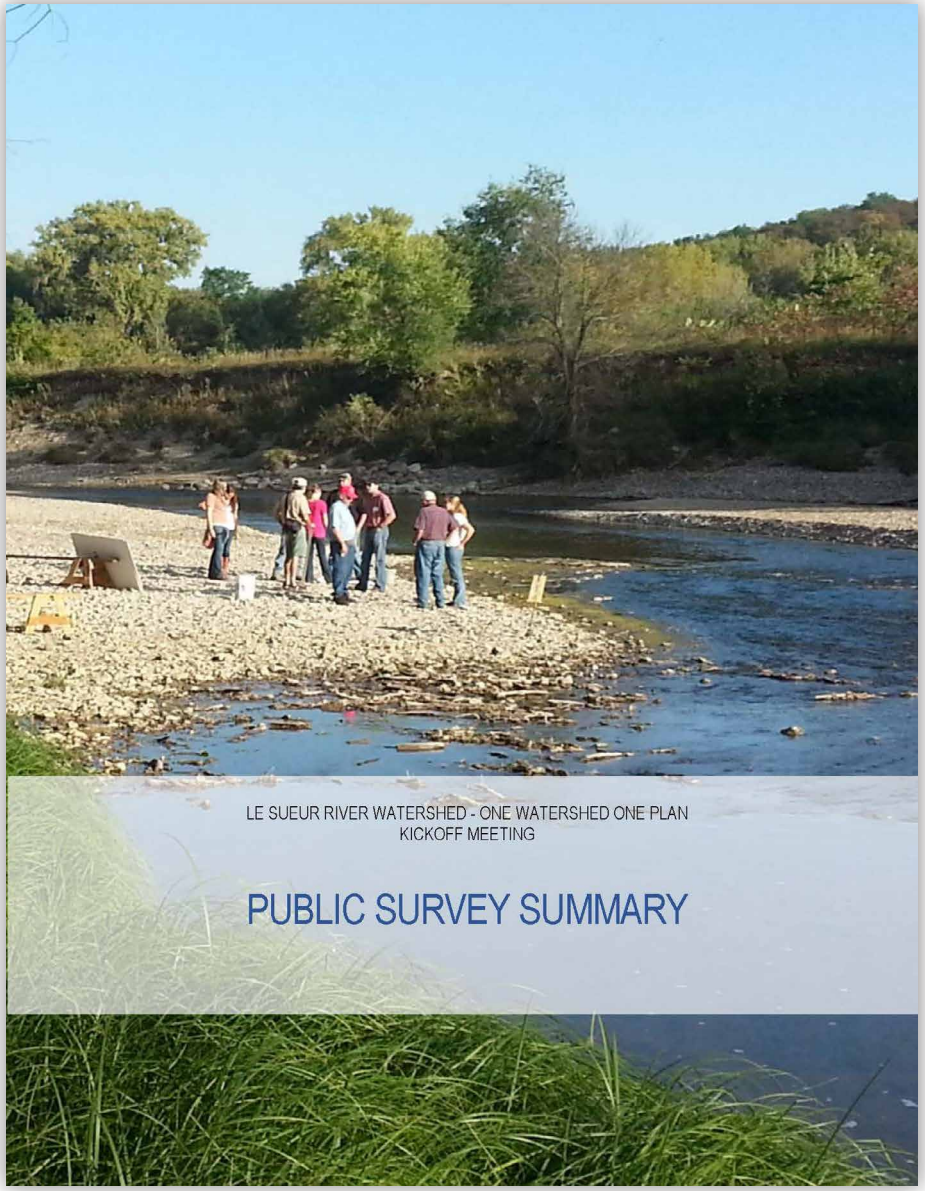
FOR MORE INFORMATION & SURVEY

Rather weigh in online? Visit the Le Sueur 1W1P website to fill out a survey or learn more about the Le Sueur River Watershed and 1W1P planning process: https://www.co.waseca.mn.us/438/LeSueur-River-One-Watershed-One-Plan
1W1P Questions? Contact Freeborn County Environmental Services at 507-377-5186 or Rachel.Wehner@co.freeborn.mn.us
Kickoff Meeting Questions? Contact the Water Resources Center, Minnesota State University, Mankato at 507-389-5492 or Kimberly.Musser@mnsu.edu

CLEAN WATER LAND & LEGACY AMENDMENT



Before the meeting, please visit the Le Sueur 1W1P website for meeting updates or cancellations.



LE SUEUR RIVER WATERSHED
ONE WATERSHED ONE PLAN
KICKOFF MEETING

PUBLIC SURVEY SUMMARY

NOVEMBER 2021

WATERSHED PARTNERSHIP

The Le Sueur River Watershed One Watershed One Plan planning partnership includes Blue Earth County, Blue Earth Soil and Water Conservation District, Waseca County, Waseca Soil and Water Conservation District, Faribault County, Faribault Soil and Water Conservation District, Freeborn County, and Freeborn Soil and Water Conservation District.

Prepared by Water Resources Center, Minnesota State University, Mankato
135 Trafton Science Center South, Mankato, MN 56001

TABLE OF CONTENTS

Background ..... p. 3
Survey Results ..... p. 4
Value ..... p. 7
Concerns ..... p. 8
Watershed Areas ..... p. 11
Watershed Management ..... p. 12
Watershed Strategies ..... p. 13
Coordination Strategies ..... p. 14
Funding Priorities ..... p. 16
General Advice ..... p. 16
Participant information ..... p. 17

APPENDIX
A – Press Release
B – Value
C - Concerns
D -Watershed Areas
E – Watershed Strategies
F – Funding Priorities
G -General Advice

BACKGROUND

This report is a summary of a survey that was conducted as part of the Le Sueur River Watershed, One Watershed One Plan (1W1P) planning effort. It is part of a citizen engagement effort associated with the kickoff meeting designed to collect information from watershed residents that will help to inform the planning process.

The survey was conducted by the Water Resources Center, Minnesota State University, Mankato (WRC) for the 1W1P planning partnership. The Le Sueur River Watershed planning partnership includes Blue Earth County, Blue Earth Soil and Water Conservation District, Waseca County, Waseca Soil and Water Conservation District, Faribault County, Faribault Soil and Water Conservation District, Freeborn County, Freeborn Soil and Water Conservation District. As part of the 1W1P process, partners will invite watershed residents to contribute and provide input on the plan at two public meetings—the kick-off and a mid-point meeting.

The main objective of the survey was to give residents and stakeholders the opportunity to provide input and identify important issues/concerns related to the Le Sueur River Watershed.

The survey centered on gaining input about the following themes:

1. What do you value and care about when it comes to your community and the natural environment? What would you like to preserve for future generations?
2. What concerns do you have about area natural resources and community?
3. What strategies would you suggest to improve watershed health and community vitality?

Methods

Planning partners wanted to gain input from watershed residents and stakeholders that could not attend the kickoff meeting or were uncomfortable meeting in person due to the covid pandemic.

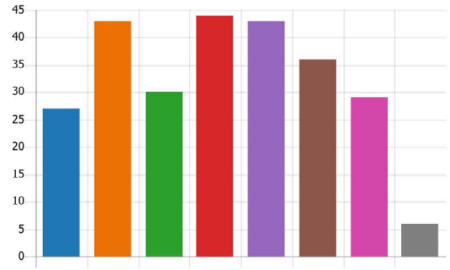
An online survey was developed in collaboration with planning partners to gain citizen input about watershed issues and priority resources. The survey design conveys the same questions asked to frame input at the kickoff meeting. The 17-question survey included both open and closed-ended questions to gain general input about citizen perspectives. By using open-ended questions, the goal was to obtain a wide range of comments from diverse stakeholders.

An interested party database was developed and 312 flyers and 461 emails were sent out to diverse watershed constituents to publicize both the survey and in-person kickoff meeting. Local partners also reached out to their constituents via their contact databases and social media channels. The survey was online for over a month ending on September 24, 2021 and received 68 respondents. The average completion time was 15- 24 minutes. Survey responses were recorded using Microsoft Forms. Open-ended responses were thematically coded using qualitative social science protocols. This report details the survey findings and summarizes respondent comments that represent a cross section of watershed residents and stakeholders (see participant profile).

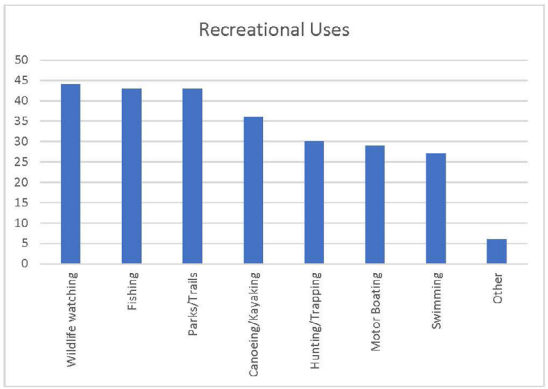
SURVEY RESULTS

1. Do you participate in any of the following activities or use the natural areas (lakes, ponds, wetlands, streams, rivers) in the Le Sueur River Watershed? (Please check all that apply)

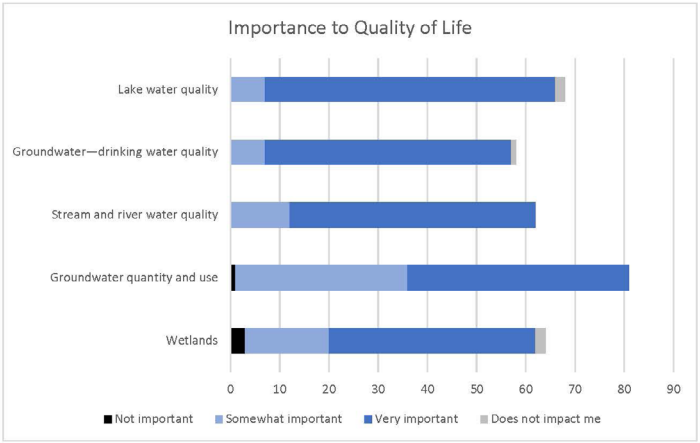
Swimming	27
Fishing	43
Hunting or trapping	30
Wildlife watching and wildlife ...	44
Parks and trails	43
Canoeing, kayaking	36
Motor boating	29
Other	6



Fishing, canoeing/kayaking, and motor boating are among the favorite water-related activities. Hiking and wildlife watching are the favorite land-based activities. Overall, wildlife watching, fishing, and parks and trails were the most frequently listed uses.

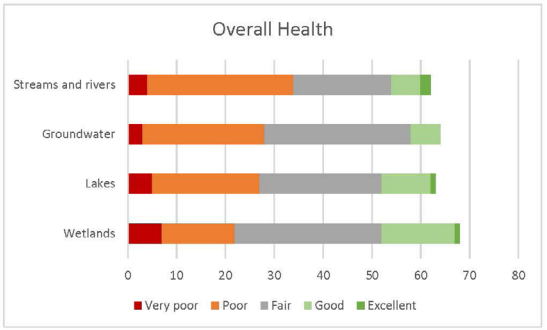


2. How important are each of the following water resources to your quality of life



Lake water quality, groundwater for drinking and stream water quality were ranked highest as "very important." Groundwater quantity and use was listed most often as "Somewhat or very important" indicating citizen concern about both groundwater quality and quantity.

3. How would you rate the overall health of water resources in your area/community?



Respondents most commonly indicated water resources were "poor" or "very poor" in the following ranking:

- Streams and rivers
- Groundwater
- Lakes
- Wetlands

Wetlands and lakes were listed most commonly as "good" or "excellent."

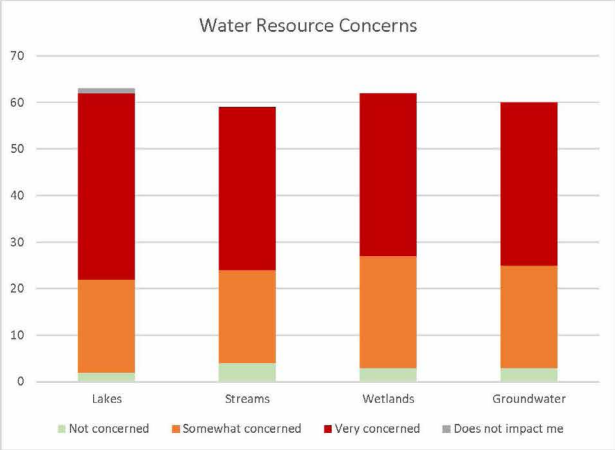
Value

3. In a few sentences, tell us about what you value and care about most when it comes to water resources and the natural environment? What would you like to be preserved for future generations?

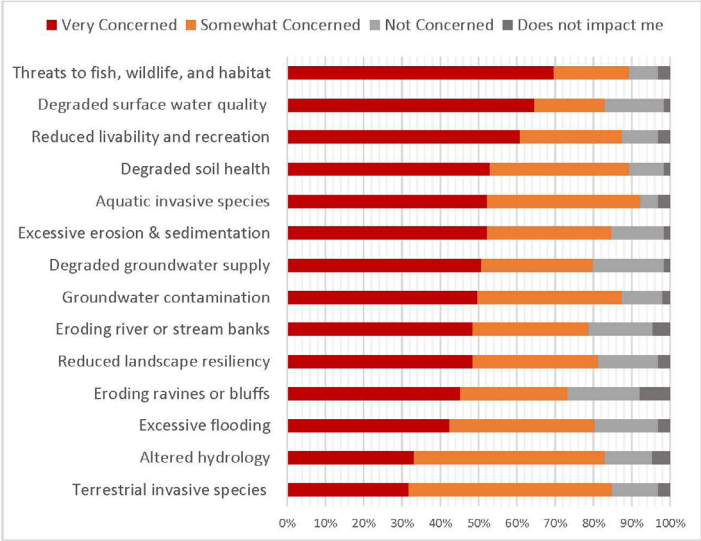
14 respondents (26%) answered **water quality** for this question.
See Appendix B for responses and summary word cloud below.

Concerns

4. How concerned are you about the health of area water resources?



5. Thinking about the Le Sueur River Watershed, what is your level of concern with the following issues?

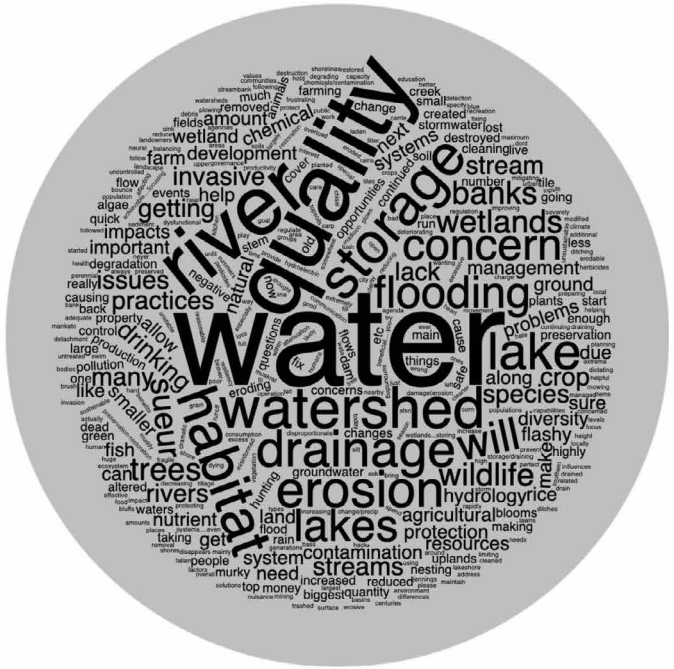


Data results showed the most common "very concerned" responses were in these three areas:

- Threats to fish, wildlife, and habitat
- Degraded surface water quality
- Reduced livability and recreation

6. What concerns do you have about water and natural resources in the Le Sueur River Watershed today? Please specify your top 2-3 concerns below.

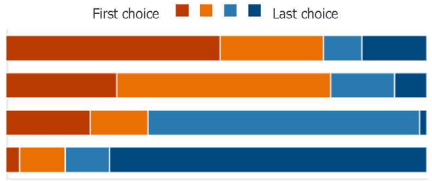
Approximately 14 respondents (27%) answered river for this question.
See Appendix C for responses and summary word cloud below.


water
river
quality
storage
habitat
watershed
drainage
erosion
lake
lakes
concern
flooding
wetlands
banks
stream
development
invasive
farm
wetland
amount
chemical
creek
farming
change
created
stormwater
lost
destroyed
cleaning
give
systems
soil
next
continued
opportunities
old
run
getting
help
events
flow
algae
quick
impacts
important
degradation
issues
practices
causing
back
property
control
drinking
allow
large
pollution
many
like
smaller
sucuer
dead
green
fish
can
trees
altered
rivers
nutrient
waters
taking
get
people
system
streams
need
murky
top
money
biggest
quantity
increased
reduced
riesting
uplands
contamination
protection
resources
agricultural
blooms
making
hydrology
rice
wildlife
make
flashy
highly
species
sure
diversity
changes
groundwater
land
flood
rain
lack
management
ground
plants
start
enough
problems
preservation
due
along
crop
concerns
eroding
natural
negatively
questions
fix
main
things
etc
cause
how
can
less
ditching
tile
going
number
cleaningtive
modified
climate
additional
wetlands
run
stem
old
opportunities
continued
soil
systems
next
stormwater
lost
destroyed
cleaning
give
stream
banks
concern
storage
quality
river
water
habitat
watershed
drainage
erosion
lake
lakes
flooding
wetlands
farm
development
invasive
wetland
amount
chemical
creek
farming
change
small
much
removed
fields

Watershed Management

8. Who do you think is responsible for water management? Please rank the options below in order of responsibility. One (1) being the most responsible for water quality to four (4) being the least responsible.

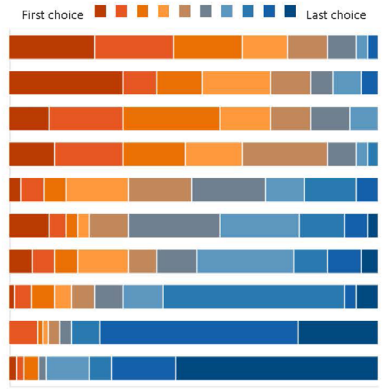
Rank	Options
1	Landowners
2	Local government
3	State government
4	Federal government



Watershed Strategies

9. What strategies do you think will improve watershed conditions? Please rank your top five (5). (These were taken from the Le Sueur River Watershed Restoration and Protection Strategy report).

Rank	Options
1	Restore wetlands
2	Improve water management on ag
3	Improve soil health and/or vegetation
4	Conservation cover
5	Improve riparian areas
6	Improve water management on urban
7	Improve lake shoreland management
8	Improve livestock and or management
9	Reduce bacteria concentration -ag
10	Reduce bacteria concentration - urban



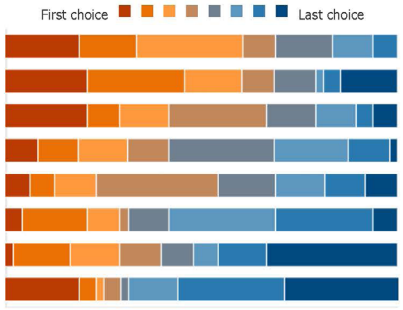
Improving water management on agricultural lands was considered the most important practice by approximately 30% of all participants. By level of first choice of importance, the order of strategies are listed below.

- Improving water management on agricultural lands
- Restore wetlands
- Conservation cover
- Improving water management on urban lands
- Improving soil health
- Improving lake shoreland management
- Improving riparian areas
- Reduce bacteria concentration from agricultural sources
- Improving livestock
- Reduce bacteria concentration from urban sources

Coordination Strategies

10. What research, coordination, funding, and policy strategies do you think will help improve watershed conditions? Please rank your top five (5).

Rank	Options
1	Outreach & education
2	Funding for conservation, BMPs
3	Watershed monitoring, studies
4	Technical assistance
5	Regional coordination
6	Local and county regulations
7	Modify processes for conservation programs
8	Modify state and federal regulations



Both conservation funding and watershed monitoring were chosen by approximately 25% of all participants. The ordered list below indicates respondents "first choice" level of importance.

- Conservation funding
- Watershed monitoring
- Modify state and federal regulations
- Outreach, education and working with citizens to improve public awareness
- Technical assistance
- Regional collaboration
- Modify local and county regulations
- Modify processes for conservation programs

11. What strategies do you think are most likely to be accepted by landowners to improve watershed health? Please specify below.

See Appendix E for responses and summary word cloud below.

Funding Priorities

12. Do you have opinions about how future efforts and funding should be prioritized? Please specify below.

See Appendix F for responses.

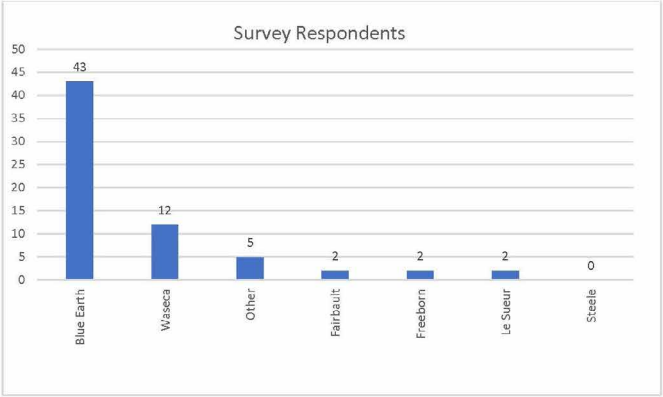
Plan Development Advice

13. Do you have any other thoughts, ideas or concerns that you would like to share about the Le Sueur River Watershed One Watershed One Plan development?

See Appendix G for responses.

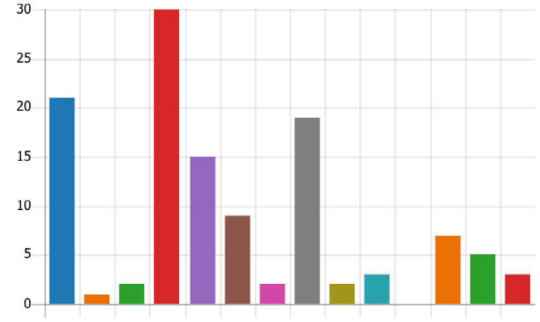
Participant Information

14. What county do you live in?

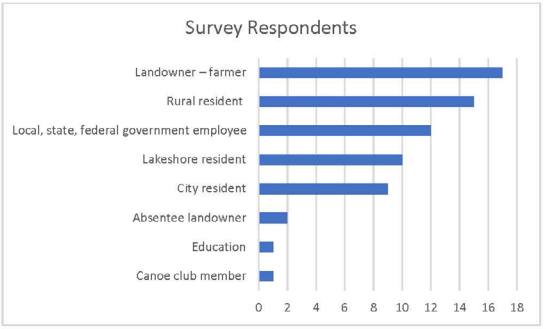


15. Please indicate what represents you best (one or two responses):

Almost 50% of all respondents identified themselves as rural landowners. Additionally, it was indicated that over 60% of all participants are either farmers or government employees.



Landowner – farmer	21
Tenant – farmer	1
Absentee landowner	2
Rural resident	30
City resident	15
Lakeshore resident	9
Elected official	2
Local, state, federal government	19
Education	2
Business owner	3
Civic organization	0
Lake association, sportsman	7
Downstream stakeholder	5
Other	3



The graph above depicts first choice responses for "what represents you best."

12. Which of the following describes your age?

0-17	0
18-30	1
31-50	32
51-70	28
71 or older	4

Most respondents were in the 31-70 age range.

Appendix A: Press Release

LE SUEUR ONE WATERSHED ONE PLAN
PRESS RELEASE

FOR IMMEDIATE RELEASE
Contact: Kimberly.musser@mnsu.edu
Date: August 18, 2021 Phone: 507-389-5492

Watershed residents are invited to a "Kick-off" meeting for the Le Sueur River Watershed "One Watershed One Plan" planning process.
Local conservation partners announce the beginning of the development of the Le Sueur River One Watershed, One Plan Comprehensive Water Plan or "1W1P". As part of planning efforts, partners are hosting a public information "kick-off" meeting on Thursday, September 16th, from 6:00-8:00 p.m. at the beautiful St. Olaf Lake Park, which is located 4.5 miles northeast of New Richland, Minnesota (17500 240th Avenue, New Richland).

Why should I attend?
Join the meeting to learn more and make sure your priorities are known and your voice is heard. The plan that will be developed will direct all future state spending in the watershed. Residents who attend the kick-off will learn more about the Le Sueur River Watershed, the 1W1P planning process, and have an opportunity to provide input on their personal priorities and concerns within the watershed. Rather weigh in virtually? Visit the Le Sueur 1W1P website to fill out a survey and learn more about the Le Sueur River Watershed and 1W1P planning process: https://www.co.waseca.mn.us/438/LeSueur-River-One-Watershed-One-Plan
For more information about the Le Sueur River or 1W1P planning process, contact Freeborn County Environmental Services at 507-377-5186 or Rachel.Wehner@co.freeborn.mn.us.

Water knows no political boundaries
Located in south central Minnesota, the Le Sueur River flows 111 miles from Freeborn County through parts of Waseca, Faribault and Blue Earth counties. Its major tributaries are the Cobb and Maple rivers. The watershed is the land area that is drained by these rivers and it encompasses 711,838 acres including the communities of Eagle Lake, Janesville, Mapleton, New Richland, Minnesota Lake, Wells and portions of Mankato and Waseca. Four Soil and Water Conservation Districts and counties will work together to develop a comprehensive plan to address water management for the entire Le Sueur River watershed.

This new state 1W1P initiative will be locally led and will build off existing local water management plans. It charges local government responsible for water management to organize and develop focused implementation plans on a watershed scale. This diverges from the past when each public entity developed their own strategic water plan. The result will be a prioritized, targeted implementation plan that will guide planning and implementation over the next ten years.

The Le Sueur River Watershed planning partnership includes Blue Earth County, Blue Earth Soil and Water Conservation District, Waseca County, Waseca Soil and Water Conservation District, Faribault

County, Faribault Soil and Water Conservation District, Freeborn County, Freeborn Soil, and Water Conservation District. Planning partners invite watershed residents to contribute and provide input on the plan at two public meetings—the kick-off and a mid-point meeting.

The Le Sueur watershed is a major source of sediment and nutrients to the Minnesota River. The predominantly agricultural watershed has many beloved recreational lakes and rivers. However, Minnesota Pollution Control Agency notes that some of the rivers, streams, and lakes continue to suffer from many problems, such as high sediment loads, low dissolved oxygen, excess nutrients, and flashy, erosive flows. This comprehensive planning effort provides an opportunity to develop strategies to address these issues with available state funding.

For more information about the kickoff meeting, contact the Water Resources Center, Minnesota State University, Mankato at 507-389-5492 or Kimberly.Musser@mnsu.edu.
#END#

Appendix B: Value

In a few sentences, tell us about what you value and care about most when it comes to water resources and the natural environment? What would you like to be preserved for future generations?

NATURAL RESOURCES, RECREATION

Natural Resources, Recreation -Hunting, fishing, swimming

- I value the natural resources the most. hunting/fishing
- Bass Lake, fishing, water skiing, swimming. The water quality seems to be getting worse and I like to see it improved. Phosphorus I'm the sediment removed by dredging.
- Fishing is a big part of what we do as a family. Habitat and water quality are important to keep a diversity of fish.
- The habitat for the animals is a must. Nature is precious and if it is thriving then we can have the hunting/fishing available because it's thriving. Clean water for the animals and foliage and for us
- I would like to see lakes clear and provide safe swimming areas and fishing.
- I would love to preserve the lakes and streams so that future generations can enjoy good fishing, swimming and other recreational activities. Safe drinking water is also very important.
- Recreation (beyond fishing) shouldn't be allowed on every body of water. Over time we have seen more and more development around lakes - development that can't be reversed. As there is more human presence or disturbance for development, wildlife is being forced away from their habitats. I'd like to see these areas and their resources protected as along with the water quality being affected, where else is this wildlife supposed to live?
- Surface waters be safe to recreate in for people and pets. Surface waters be cool enough and oxygenated enough to have good fish populations. Lakes and rivers have bank stability and descent clarity and good base flow for kayaking, but also for fish and other wildlife populations.

Lakes & Shorelands

- Would like my children and grandchildren to be able to fish in lakes and rivers that aren't green.
- Rivers you can recreate on. Save nice lakes.
- Access to water resources for recreation. I like to recreate in areas that have been subjected to as little human development as possible.
- The ability to use the lakes and streams recreationally.
- I hope to continue to kayak on the area lakes and be able to swim off the pontoon and not have all the lakes pea green topped with blue green algae.
- The ability to swim and do water sports in our lakes
- Preserve and/or improve water quality so lakes can be used by future generations.
- I would like to see our lakes as preserved; more specifically, limiting the impact of invasive species, maintain good water quality, and limiting additional shoreline development.
- I would like to see healthy lakes and streams that are not heavily impacted my large inputs of storm water.
- Lakes are important. Preserving those resources are important for future generations.
- Lakes are most important priorities to me.
- The ability to use the lakes and streams recreationally.

- Natural shorelines and reducing both homeowner and ag nutrient runoff from ag fertilizers and lawn fertilizers. Would like my children and grandchildren to be able to fish in lakes and rivers that aren't green.
- We are laser focused on what is in the water, while allowing uninhibited development around the water. Can't we have some undeveloped shoreline left?
- Water quality is a top priority - clean lakes
- Drinking water, lakes, wetlands, and wildlife habitat are most important priorities to me.
-

Ecosystem, Habitat & Wildlife

- I have seen wildlife and natural scenery on the landscape decline steadily since I was a kid and young adult. Once common species that were taken for granted are now rare. The landscape is less dynamic, less interesting, and has lost an aesthetic appeal.
- Having a healthy and functioning ecosystem that benefits wildlife and humans.
- I would like to see clean water that is benefitting habitat, rather than recreation, to be preserved for future generations.
- Drinking water, lakes, wetlands, and wildlife habitat are most important priorities to me.
- Thanks to our good soil, sun shine and the fact it rains.
- Lakes are important, groundwater and wildlife habitat are important. Preserving those resources are important for future generations.
- Natural areas are very important for vibrant communities, watershed health and resiliency. We need more connected habitat, opportunities for outdoor experiences, and implementation of continuous cover on the landscape.
- Would like to see a variety of habitats and more riparian areas.
- We need to get the trees cleaned out of the River system and to control the wildlife that is destroying the river banks.
- Providing habitat for wildlife and native plants so that natural ecosystems can thrive. I want future generations to be able to fish, see monarchs, and enjoy natural lands.
- We need to embrace an understanding that water is life giving, the basis for life itself, and recognize that we are responsible more for protecting our abundance of local resources than we are for feeding the world. Which even though we say is what we are doing, is not what we are doing.

Beauty and Nature

- At my age I am not really using any of this but its beauty. Need to take care of it by being very careful we do not dump this in
- Just the sense of nature that it brings.
- I value all people's opinions on how to care for our water resources and I feel that everyone should have an opportunity to weigh in on how management of waters should be decided upon.

SURFACE WATER

Water quality

- Water quality is a top priority
- Preserve and/or improve water quality so lakes can be used by future generations.
- Quality water as well as the environment between riverbanks. Cleaning the trash in the rivers.
- We must keep lakes and rivers clean and free from pollution.

- keeping pollutants out of our water as much as we can. Viewing our water as a precious resource and having a stewardship ethic.
- I hope to continue to kayak on the area lakes and be able to swim off the pontoon and not have all the lakes pea green topped with blue green algae.

Nutrients – Nitrogen and Phosphorus

- I want our topsoil and nutrients to stay where they are so that they can be an asset to us, instead of washing downstream and being a liability for someone else. I want future farmers and homeowners to find alternatives to dousing their property with poison multiple times a year.
- Bass Lake, fishing, water skiing, swimming. The water quality seems to be getting worse and I like to see it improved. Phosphorus I'm the sediment removed by dredging.
- Keep the soil in the field and phosphorus out of the water. We need to produce food for ever so how do we do that. Current practice needs updating to clean up the system
- Cleaner water without nitrogen and other chemicals

Wetlands

- I value wetlands and natural streams. I am concerned with all of the tiling and draining of the Earth. I would like to see more natural wetlands, ponds, and native ecosystems preserved or restored for future generations.
- Drinking water, lakes, wetlands, and wildlife habitat are most important priorities to me.
- Restoring wetlands, seeding prairies, and storing water on the landscape like it had been in the past will help with water quality, habitat, and flooding of communities.
- Cover crops should be looked at where applicable to help water make its way through the soil profile and help create organic matter that will benefit the crop in future years. The direction the "agriculture" industry is heading is a bit worrisome in this part of the state and it appears that is becoming very well-known and documented as far as water quality entering the river systems from the Le Sueur.
- Water is a limited resource. We need to improve water quality through monitored use of chemicals by landowners, and comprehensive plans for reduced sedimentation, natural filtration and water storage. We need to carefully monitor water appropriation so that there is enough water for everyone.
- Wetland preservation is important to water quality and maintaining buffer strips along public waterways provides habitat and improves water quality.
- Recreation like lakes. Wetlands. And wildlife habitats. Clean drinking water
- I value water quality. I think that it's possible to improve water quality in the Le Sueur River Watershed through wetland restoration and increased adoption of perennial crops in sensitive areas.
- Restoring wetlands, seeding prairies, and storing water on the landscape like it had been in the past will help with water quality, habitat, and flooding of communities.

Water flow, flooding, drainage

- Having it available when I need and having the ability to remove it when I have too much of it.
- The water quality in our rivers, streams and lakes is deteriorating rapidly. It is my opinion the bulk current issues stem from agricultural drainage due to the increased use of tile and the expansion of ditches. We need to address these issues to help reverse the decline in the quality of the water in the watershed.

- I own an "oxbow" shaped small parcel on the river-for hunting purposes. The dramatic increase in flood damage/erosion since 2002 has nearly made my property an island. I have spent over $5K in my own funds to rip-rap it and received zero help from the DNR--except to tell me what I couldn't do. The quick runoff to the river needs to be controlled.
- With larger more intense storm events and modern advancements in ag drainage our communities have seen a significant increase in flood events that cause damage, communities should not pay the price for poor land management decisions (farming poor ground that was historically wetland).
- Water that doesn't grow tons of algae and weeds. Would really like to see more steps to filter drain and tile water to slow runoff down.
- Fresh water is a limited resource. Climate change is impacting our available water. Therefore, it is imperative to take care of this resource for future generations. Water quality is a top priority - clean lakes, clean groundwater and plenty of it.
- The riverine environment doesn't seem natural to me when it's being continually flooded and eroded. Nature doesn't have a chance!
- We need to slow or reduce the amount of water getting to our rivers--they are being destroyed by too much stormwater and ag tile water.

Water Storage

- More upland storage needs to be taking place. Ag drain tile has drained all of our wetlands and depressional areas that historically held water and allowed it to meter out or soak through the soil profile.
- We need to improve water quality through monitored use of chemicals by landowners, and comprehensive plans for reduced sedimentation, natural filtration and water storage.
- Reduce sediment in Le Sueur River, increase holding ponds.
- Restoring wetlands, seeding prairies, and storing water on the landscape like it had been in the past will help with water quality, habitat, and flooding of communities.

Trees down

- I would like our rivers to be cleaned up of trees that have fallen so the stream isn't "naturally" rerouted because of them.
- We need to get the trees cleaned out of the river system and to control the wildlife that is destroying the river banks.

Dams

- I would like dams put in place where necessary to control flooding and produce electricity.

Erosion & Sediment

- The Le Sueur River is highly erosive and has peak flooding that has damaged many properties, there have been at least 3 homes that have had to be removed adjacent to the river due to high erosion activity and severe stream migration.
- Reduce sediment in Le Sueur River, increase holding ponds.

Soil

- Soil is the ultimate thing to concentrate on though. We cannot achieve water quality until we first have soil quality.

- Thanks to our good soil, sunshine and the fact it rains. Most value is these resources that feed and nourish families locally and around the world. These resources have made our communities tick for the past 100 years.
- I want our topsoil and nutrients to stay where they are so that they can be an asset to us, instead of washing downstream and being a liability for someone else. I want future farmers and homeowners to find alternatives to dousing their property with poison multiple times a year.
- Keep the soil in the field and phosphorus out of the water. We need to produce food for ever so how do we do that. Current practice needs updating to clean up the system
- Improve the soil and the water quality will follow.
- Restoring wetlands, seeding prairies, and storing water on the landscape like it had been in the past will help with water quality, habitat, and flooding of communities.
- Cover crops should be looked at where applicable to help water make its way through the soil profile and help create organic matter that will benefit the crop in future years. The direction the "agriculture" industry is heading is a bit worrisome in this part of the state and it appears that is becoming very well-known and documented as far as water quality entering the river systems from the Le Sueur.
- Water is a limited resource. We need to improve water quality through monitored use of chemicals by landowners, and comprehensive plans for reduced sedimentation, natural filtration and water storage.
- We need to carefully monitor water appropriation so that there is enough water for everyone.

GROUNDWATER

Groundwater & Drinking water

- Groundwater/drinking water is the top priority. However, water quality of our lakes and streams/rivers is essential as well. I believe our water quality is already degraded, so improving, rather than preserving, should he the intent.
- Groundwater/drinking water is the top priority.
- Drinking water is the most important resource. Fortunately, we have good drinking water quality in the watershed for the most part. This needs to be protected and preserved.
- Groundwater - drinking water is most important.
- Drinking water, lakes, wetlands, and wildlife habitat are most important priorities to me.
- Clean drinking water
- Passing water resources to future generations in a condition suitable for human consumption.
- Degrading lakes, rivers and ground water should not be our legacy.
- Water quality is a top priority - clean groundwater and plenty of it.
- Drinking water, lakes, wetlands, and wildlife habitat are most important priorities to me.
- Well, I like to be able to drink the water from my well and not have ag chemicals in it.

LAND USE

Agriculture & BMPs

- Good healthy ag lands.
- I want our farmland preserved for future generations so we can all eat food. Terraces, WASCOB's, grass waterways, saturated buffers, improved oxbows, renovation of RIM/CREP acres, improved and corrected SEPTIC SYSTEMS, installation of side inlets, county ditch

improvements and maintenance, and a renewed commitment to development of farm ponds are all great traditional practices that should be fully supported and properly located with the guidance of a conservation consultant who will work closely with landowners throughout the Watershed.
- That there is land and land use that provides for my family to live and grow at home in this watershed
- Poor and marginal crop ground should be looked at for retirement through a program to restore it to the natural state.
- Most value are these resources that feed and nourish families locally and around the world. These resources have made our communities tick for the past 100 years.

Communities

- Vibrant rural communities.
- Communities should not pay the price for poor land management decisions (farming poor ground that was historically wetland).
- Thanks to our good soil, sunshine and the fact it rains. Most value are these resources that feed and nourish families locally and around the world. These resources have made our communities tick for the past 100 years.
- Small towns are not what they used to be with fewer families in the area. Resources are taken out of the land, sent elsewhere and we are left with the loss. I would like to see some of that come back and an interest in sustainability.
- Restoring wetlands, seeding prairies, and storing water on the landscape like it had been in the past will help with water quality, habitat, and flooding of communities.

EDUCATION & OUTREACH

- We need constructive public awareness and involvement.

Regulation

- We all have our own source of clean water. Not regulated by government.

Appendix C: Concerns

What concerns do you have about water and natural resources in the Le Sueur River Watershed today? Please specify your top 2-3 concerns below.

SURFACE WATER

Flows & hydrology drainage

- My top concern is increased flows due to farm drainage and urban influences.
- Altered hydrology
- Water quantity & lack of water storage
- Flashy systems that fill up quick & drain out quick
- Flashy river levels bring down sediment and prevent helpful plants from getting started.
- Flashy, erosive flows. Flooding communities, muddy water.
- Altered Hydrology, eroding river and stream banks and reduced landscape resiliency.
- Mainly pollution and run off
- Flooding (Mentioned four times)
- How to maintain ag productivity but also address water and natural resources. Preparing for storm events that cause a disproportionate amount of damage(erosion).
- Movement of the water is natural.
- The watershed is fragile one that is deteriorating rapidly. Largely uncontrolled drainage practices and lack of water storage have created a highly dysfunctional hydrology. River bounce following rains is more dramatic than ever, causing destruction of the highly erodible riverbanks and nearby basins.

Drainage

- Altered hydrology from too much tile drainage.
- Untreated Ag drainage into area waters.
- Increased farm drainage.
- Farm tiles
- Continued agricultural drainage.
- Severely unstable river system and excess ditching in upper watershed
- Balancing adequate drainage & water quality
- The rivers are getting trashed from so much stormwater and ag tile water. We're using them like a kitchen sink and if we don't start taking care of them now, the next generations are going to hate us.

Water quality

- Degradation of lakes and river water quality
- Wanting to make sure the water quality is good enough to swim in
- Water clarity.
- Increasing murky water.
- Water quality
- Ag chemicals/contamination.
- Continued degradation of water quality in lakes and rivers
- Bass Lake water quality.

- Nutrient overload
- Soil erosion and nutrient run off.
- Silt chemical runoff contamination
- River and stream water quality is my priority number 2.
- Pesticides and herbicides
- Water quality.
- Water quality of rivers and streams.

Nutrients - algae

- High amounts of nutrient inputs into lakes and streams causing large blue green algae blooms.
- Algae blooms in lakes and rivers.
- Harmful Algae blooms
- Algae blooms in lakes and rivers.

Lakes & shoreline

- I live on Madison Lake so lake water quality is number 1 concern
- Lake quality
- Lake water quality
- Poor lake quality
- Algae blooms in lakes and rivers.
- Continuing development along lakeshore with green, lush chemical laden lawns and reducing tree cover.
- Making sure the shore line is restored and preserved
- Shoreland management
- Development near the shores
- Degradation of natural shorelines.
- The lakes are so important for recreation. We need to make sure they are safe for humans and fish

Wetlands

- Wetland preservation-restoration, water storage. Those items will help other issues related to surface waters.
- Wetland preservation
- Wetland restoration - preservation
- Drained wetlands,
- Water storage/draining of wetlands
- Wetlands being destroyed (or modified to allow development around them)
- Draining and impacts to wetlands...storing water in wetlands is important to all types of water quality, habitat, and flood storage.

Erosion, Stream Banks

- My largest concern is the river erosion that is taking place along the bluffs surrounding southern Mankato,
- Too much sediment and prevent helpful plants from getting started.
- Streambank erosion
- Eroding stream banks. Altered hydrology from too much tile drainage.

- Erosion of the banks and the changes to the property values as that land disappears.
- Filter the lakes and streams so they are cleaner, less murky, less invasive species etc.
- Erosion
- River bank erosion
- Soil erosion

Trees

- Cleaning up the river, getting the brush and trees removed that provide habitat to nuisance animals.
- Dead trees in the river system need cleaning out. Muskrat population is out of control along with beaver because of all the trees.
- Trees
- Fallen Trees
- Way too many dead and old dying trees affecting the river system. The old debris needs to be cleaned and removed.

Water storage

- The problems of the Le Sueur River have been created over centuries. Watershed planning cannot fix the issues. Mitigating the impacts of drainage and climate change/precip change, is the only reasonable goal. People like Carrie Jennings and agencies that tell people that the only effective places for water storage are in the extreme uplands are not helping the overall watershed. Water storage can help local smaller streams, wetlands, lakes, ditches and other water systems....even if they don't fix the Le Sueur, they help other water bodies in the watershed. Water storage has other benefits like habitat, flooding attenuation, etc,., other than fixing the main stem of the Le Sueur. Each smaller watershed has uplands areas where storage is beneficial.....you have to start somewhere and doing small watersheds should be the focus because that change can actually make differences locally. Huge changes and storage systems for the main stem of the Le Sueur are likely never going to be achievable...focusing only on that will cause many smaller opportunities to be lost.

GROUNDWATER, drinking water

- Ground water protection
- Groundwater protection.
- Drinking water quality.
- Protecting drinking water.
- Ground water with agricultural chemical pollution making the ground water unfit for human consumption.
- An additional concern is groundwater contamination and quantity.
- Protect drinking water from contamination. If we don't have safe drinking water we really have issues.

RECREATION, NATURAL RESOURCES

Habitat & wildlife

- Decreasing amount of wildlife habitat and wildlife populations.

- Rice creek flooding due to dam at Rice Lake always being left maximum height. This summer's drought was a perfect time to allow some water to flow. Now the next 5" rain will flood the creek and erode the stream banks as Rice Lake is full and has no capacity to hold water back during large rain events. That dam operation is extremely frustrating. Could be better managed to allow hunting and water control not just hunting.
- Nesting habitat mowing during nesting season, especially public property.
- Continued degradation of water quality in lakes and rivers and loss of fish and wildlife habitat
- Wildlife habitat being destroyed by agricultural practices.
- Loss of quality habitat
- Wildlife protection

Recreation

- Wanting to make sure the water quality is good enough to swim in
- The lakes are so important for recreation. We need to make sure they are safe for humans and fish

Invasives

- Carp are one of the biggest problems in our lakes.
- Invasive species
- Invasive species in the water
- Loss of quality habitat due to invasives
- Limiting invasive plants and animals.

LAND USE

Land Use, Agriculture

- Amount of land in ag production
- How to maintain ag productivity but also address water and natural resources.
- Not enough crop diversity. IF we can get more crop diversity back on the land it will open up many opportunities for improving the health of our soils and water. Spend the money on getting more small grain and perennial species planted, cover crops and reduced tillage will follow.
- Excessive plowing and removal of vegetation for crop fields.
- Sustainable food production systems that reduce negative impact and increase crop diversity. Corn fields and chisel plows are hard on our environment
- Unsustainable farming practices, degrading our topsoil
- Soil erosion and nutrient run off.
- Loss of quality habitat due to invasives and farming practices.
- Lack of management

PLANNING

Decision Making and Regulation

- I am concerned those who don't live, work and play in our watershed will be the ones dictating solutions which fit their agenda and money flow. I am concerned that the wrong special interest groups will get in charge of things, be misinformed and try to regulate the heck out things that don't really need regulation.

- Your questions do not get to the heart of the issues. Governance, management, detection of problems, communication to landowners, and many other factors are more important than these questions you ask.

Education

- Lack of education
- Detachment from our water resources in the city

Industry

- My biggest concern is mining within the watershed and all its negative impacts to the ecosystem
- Hydroelectric capabilities

Appendix D: Watershed Areas

8. Are there specific watershed areas or water bodies (lakes, rivers, wetlands) that you are concerned about? Please specify below.

Lakes

* For reference: https://mrbdc.mnsu.edu/major/lesueur/desclake32

- majority of lakes in the watershed
- Really, all of them!
- protect nice lakes – Madison Lake, St Olaf, Bass Lake

- Madison Lake (Mentioned sixteen times)
- Bass Lake (Mentioned seven times)
- Lura Lake (Mentioned five times)
- Lake Elysian (Mentioned four times)
- St. Olaf Lake (Mentioned twice)
- Eagle Lake (Mentioned twice)
- Lake Francis
- Indian Lake
- Alice Lake
- Born Lake

Rivers & Subwatersheds

- The Le Sueur River Watershed as a whole, but specifically areas with highly erodible soils.
- Le Sueur River and creeks flowing into the Le Sueur.
- Le Sueur River (Mentioned eight times)
- Main stem of the Le Sueur

- Focus on the small sub watershed that each local community values.
- New Richland

- Cobb River (Mentioned three times)
- Maple River (Mentioned twice)
- Iosco Creek (Mentioned twice)
- Little Le Sueur River
- Rice Creek
- Bull Run Creek
- New Richland watershed

- (Downstream)
- Minnesota River
- The Blue Earth River is not my favorite but it seems to be the most popular for canoeing and kayaking Thus, it has more people exposed to its waters. Also, the Blue Earth and Minnesota are the ones that can affect the quality of Mankato's drinking water the most.

- Blue Earth River (Mentioned twice)

Wetlands

- The protection and restoration of wetlands is critical
- All of the drained wetlands
- Various wetlands that are not named
- Wetlands in general
- Wetlands

Soil Health

- Soil Health
- Soil Health and nutrient loading

Drainage Ditches

- Drainage ditches (Mentioned twice)

Flooding

- Concerned about communities flooding
- Worried about flashy flows and flooding downstream

- The Le Sueur River by St. Clair and how fast that river can rise and flow
- Le Sueur River-near Pemberton/St. Clair

Eroding banks

- Also, the erosion of the banks and what that can do to property values.
- Focus on the large amounts of erosion taking place on the Le Sueur River!

WMAs – Wildlife Management Areas

- Local WMA's like Indian -Born
- Protect the several WMA's-WPA's

Lakeshore Development

- A big concern that I see is development (or proposed development) along the shores of lakes that aren't meant for recreation (beyond fishing) - namely Eagle Lake and Gilfillan Lake. There is a large population of wildlife (namely geese, but many other birds on the water as well) that are being forced from their habitats because of development (or will be because of proposed development). Trees are destroyed for views. The shoreline is modified. Vegetation is removed. Not every body of water should be for human entertainment or a place to build a huge house. Eagle Lake South is a Designated Wildlife Lake. Yet the city council of Eagle Lake has discussed development along its shores. This will not only affect the water quality, but wildlife will be forced to move. There should be enforceable protections to leave certain bodies of water alone and to be as natural as they can be.
- Lake Elysian. Waseca County considers it a cash cow for property tax dollars to parse out the shoreline for housing that is not needed. Study the history of these houses, they turn over every couple of years. It can't be that necessary to have more houses on the lake when people who build them sell them in less than 5 years.

All

- All of the surface water has been negatively impacted by the agricultural use of the property
- The bodies that receive too much water - that used to be stored in the watershed
- No, all of them
- It is all one watershed and one all impacts all
- All of the above. I am more concerned about governance and how the money be spent and where it is to be spent. Your questions do not get to the heart of the need.

Outside watershed, downstream

- The Le Sueur River and the sediment load it is contributing to the Minnesota River
- Lake Washington
- Lake Jefferson
- Ballantyne Lake
- Duck Lake
- Minnesota River

Appendix E: Watershed Strategies

12. What strategies do you think are most likely to be accepted by landowners to improve watershed health? Please specify below.

Funding, Cost share & Incentives

- Anything they get paid to do and doesn't take large amounts of land away from production. Money talks.
- Anything that will financially help the landowner to change or implement a conservation practice
- We need to have disincentives for not practicing sustainable land use or at least stop providing incentives for those who ignore the issues. These are long term resources for our Country and a few generations should not degrade them.
- Cost share to set aside land for water retention
- BMPS that implemented with cost sharing, or free, for the landowner.
- More cost-share policies to help get landowners to do the right thing.
- Regulation and compensation, in that order, will be the only way to make a measurable impact in the watershed.
- Funding and a plan for future generations.
- Cost share. You can't expect landowners to have to fork over $10,000s of dollars as their portion of cost share.
- If cost shared appropriately, I hope the addition of a small grain. Cover crops is ever expanding along with reduced tillage. If folks use crop rotation though they will very likely reduce their tillage and increase their use of cover crops. Crop rotation is our biggest short fall in this watershed.
- It seems many landowners don't like to be told what to do. That is very frustrating if they are a part of the problem. Conservation programs that pay to put in wetlands, etc... may be one of the ways landowners will listen. Conservation methods affects some individual's livelihoods, so they don't want to lose money. So, incentives may be helpful if they won't do the right thing on their own.
- Public should pay for clean water and a healthy environment. Don't stick all the cost on the landowners and farmers. Public /everybody /demands clean water so everybody pays a share. Buffers? Sure. Rent my land along the ditch, let me hay it Restore wetlands? Pay me for the ground, bring the tools and have at it. And, so on

Regulation & Enforcement

- A mixture of voluntary and mandatory/required practices.
- Most large landowners have a sense of being overruled by the government even though they are a large problem
- They need to do their job too. I think more chemical regulation is needed. So much tile has been laid into fields that I think that's almost too far gone.
- Everyone will complain about something. Setting very high-water protection standards and then enforcing these standards. Changing the perception that the poor little farmer can't change the way his chemical mix affects ground and surface waters.

- Regulation and compensation, in that order, will be the only way to make a measurable impact in the watershed.
- Unfortunately, unless there is monetary compensation most people will do little. Regulation is the only real way to improve.
- Water regulations will need to be changed to address drainage issues. Farmers will not agree to change without new requirements.

BMPs

- Grade stabilization, alternative side inlets, reduced tillage practices, cover crops
- Streambank stabilization, water storage areas, wetland restoration, soil health practices,
- Simple processes and cost share on plans which are not over engineered and have common sense approaches.
- Help with waterways and terraces.
- Storm water storage, if properly funded and supported
- Removal of surface tile intakes and stream/lake bank erosion controls. Rice Lake dam utilization.

Existing Programs

- Voluntary cost share programs with flexibility. education, outreach, and demonstration. Continue to have short term ag land retirement (CRP) and permanent (RIM) options available. Working lands strategies that are economically viable (break even) or provide competitive edge (profitable).
- Minnesota Agricultural Water Quality Certification Program

Well Sealing

- Well Sealing is an overlooked practice that is important to protect ground water. There are abandoned building sites throughout the watershed that are being torn down and farmed over. The wells need to be sealed. Talk to Blue Earth County about their well sealing program and the threats of unsealed wells to the water supply.
- Well Sealing (Mentioned twice)

Soil Health

- Soil Health (Mentioned three times)
- I hope cover crops if they feel there is some assistance to get started

Crop Rotation & cover crops

- If cost shared appropriately, I hope the addition of a small grain. Cover crops is ever expanding along with reduced tillage. If folks use crop rotation though they will very likely reduce their tillage and increase their use of cover crops. Crop rotation is our biggest short fall in this watershed.

Buffers

- Buffer strips in erodible areas which they get paid for.
- Buffers adjacent to waterbodies and bluffs (rivers, creeks, streams, lakes, ponds, wetlands) buffers.
- Recommending lake shore buffer plants that help with water quality without overly impacting lake use and enjoyment.
- Buffers? Sure. Rent my land along the ditch, let me hay it

Shoreland

- Lawns are the number one crop. Lakeshore property does not require a chem lawn look with chem lawn leaching into the lake. Farm tile drainage can be treated expensively with known methods developed in MN.
- Shoreland management

Wetlands

- Wetland preservation
- Wetland restoration
- Restore wetlands? Pay me for the ground, bring the tools and have at it. And, so on

Trees

- Encourage local landowners to clean up the trees on their lands when they can and the river is low-pay part of the direct costs when they do for clean-up efforts'
- The rivers could be cleaned up from the down trees.
- Removes capability of trees along rivers.
- clean up the dead trees
- Control the bad wildlife like beavers and muskrats and clean up the dead trees

Outreach & Education

- Education, outreach, and demonstration.
- Education is critical. Educating landowners on the requirements, best practices and potential funding/help will improve participation. Unfortunately, landowner acceptance of regulations or practices has proven difficult.
- Remember 56% of land in the area is owned by absentee owners, this means they don't live in the county. Do they really care?
- Get land owners to the watershed meetings.
- Education followed by cost-share policies to help get landowners to do the right thing.
- Build Knowledge
- Communication and education. Newer landowners often don't think about the impact of modifying a shoreline or what is "okay" for them to do when building near a lake. The same goes for city officials when it comes to development. There is little forethought of "If we change this, how will it change x,y, and z further down the line (literally and timewise)"? Farmers also get a bad rep for "polluting" the water when it's not always on them OR they misunderstand their applications and the polluted runoff is unintentional. If they live on the water (lake, stream, river, etc.) or have wetlands on their property, some information on their responsibilities to protect that resource would likely be helpful. Some may have no idea damage is being done or how they can help.

Technical Assistance

- Technical assistance re: erosion practices and sources of low-cost funding/grants to do so.
- Being this watershed is 80+% agriculture the answer to this seems apparent. Understandably the cities, natural erosion of river/stream channels, and storm patters will play a role. However, being this watershed is so heavy Ag, agriculture need to be involved, willing to try new things and not just continue to do what "grandpa did", retain some water on your crop ground (cities

and developments are required to along with many other requirements that Ag is "exempt" from), and just plain be accountable for your actions.
- Most people don't know what these strategies are.

Building relationships & Trust

- A true and sincere conservation consultant would be the best investment by the Watershed to build trust, locate the correct practices, educate the public and landowners with field days and other communication efforts. Interpersonal relationships are the key to success.

Appendix F: Funding Prioritized

13. Do you have opinions about how future efforts and funding should be prioritized? Please specify below.

SURFACE WATER

Flooding & Flows

- Additionally look at some potential easements in priority areas that would benefit or reduce flooding of communities and pay these folks accordingly to get it done.
- Practices that lower peak flows and water volume in rivers; wetland restorations that have multiple benefits
- St. Clair faces erosion from the river floods and there is no current funding to help solve that.

Water Storage

- Funding to increase water storage and wetlands should be the number one priority.
- More funds should be funneled into water storage practices.
- Hold the water between the tiled field and the river, Big job but only way to get water quality improvements we need. Tile is crucial so let's figure out the storage plan
- Detaining water
- Make practices that retain/hold water a priority and pay the landowners well that are willing to try these practices. Hopefully once others see the benefit to the many(cities) versus just an individual they would be willing to install practice on their own farms. Not just permanent water retention, temporary that would allow crops to grow with drawdown being 24-48 hrs., so there is a benefit for both involved. Additionally look at some potential easements in priority areas that would benefit or reduce flooding of communities and pay these folks accordingly to get it done.
- Fund projects that are cost effective and have multiple benefits. like water storage, habitat/pollinators, water quality.
- There are a lot of natural basins in the watershed that are using a pump to drain. There should a program for land owners that are attractive for them to pull the pumps to gain back the natural basins along the streams, this will help slow the water and drop sediments. Also, the groups that want to restore wetlands have to be willing to compromise with landowners, and not always have to have the whole basin, I was involved in a couple drainage main projects that there could have had some storage areas in them if they were willing to compromise.
- same as above

Wetlands

- Funding to increase water storage and wetlands should be the number one priority.
- Wetland protection
- Practices that lower peak flows and water volume in rivers; wetland restorations that have multiple benefits
- Also, the groups that want to restore wetlands have to be willing to compromise with land owners and not always have to have the whole basin,
- Wetland restoration
- Wetland restoration

- Efforts to preserve and protect wetlands and groundwater. Not sure what can be done but those are important.

Drainage & Tiling

- I'd like to see an increased effort for water retention on farm drainage projects. Funding has been an issue, along with willing participants. I'd also like to see a continued dedication to well sealings throughout the entire watershed. Also, I'd like to see the Planning and Zoning offices within the watershed provide educational offerings (mailers, website, etc.) to property owners focused on the regulations and best practices of shoreland management.
- I was involved in a couple drainage main projects that there could have had some storage areas in them if they were willing to compromise.
- Tile surface intakes removed to allow soil to filter nutrients out before the surface water enters tile lines that discharge into Bass Lake
- Regulating the large agriculture tiling system

Erosion & Streambanks

- Stream bank erosions is obvious and expensive, let's start here.
- Erosion areas
- Fix that river erosion!
- Individual stream bank projects should not be a priority. They are costly and benefit just a few people instead of the greater watershed.
- Find where the highest erosion/nutrient run off is taking place and start there
- St. Clair faces erosion from the river floods and there is no current funding to help solve that.

Lakes

- Lake protection
- Focus on lakes
- In the case of a Designated Wildlife Lake (one of only 70 in the state), there should be special protections to ensure its purpose is for wildlife habitats, not human recreation or development. While cities are going to continue to grow wildlife and the quality of the water shouldn't suffer for it.
- Lakes. Rivers. Wetlands. Boat launches. Trails. Parks.
- Getting the lakes and rivers cleaner. Waseca's lakes are horrible and there aren't many to choose from in southern MN. St. Clair faces erosion from the river floods and there is no current funding to help solve that.
- Drinking water first. Lakes second, rivers third.

Soil Health

- Cover crops is ever expanding along with reduced tillage. If folks use crop rotation though they will very likely reduce their tillage and increase their use of cover crops.
- increased use of cover crops or perennial cover.
- Build Market for cover crops
- Put a bunch of time and effort and money getting a market for small grains in the area followed by funding for cover crops and watch the soil and water quality improve exponentially.

Buffers

- All funding should go to buffers
- buffer strips

Perennial cover

- Perennial cover

Septics

- Bass Lake #1. Septic system upgrades on the north shore that have been shown to be leaking into Bass Lake.

GROUNDWATER

Groundwater & Drinking water

- Ground water protection is important and projects like sealing wells or water testing are important.
- For example, sealing wells makes a difference to protect groundwater from contaminants.
- Efforts to preserve and protect wetlands and groundwater.
- Drinking water protection and lakes
- Drinking water first. Lakes second, rivers third.

PROCESS

Funding

- Funding to increase water storage and wetlands should be the number one priority.
- State and federal funding.
- State and Federal government must make funding available to farmers so that it will pay off their investment to water quality.
- Just as a One Watershed Plan is designed to lessen red tape, better Federal and State laws and funding could do a lot.
- Keep Federal government out of this except for funding resources. Fed involvement always screw it up.

Funding – Cost-benefit analysis

- The cost of future efforts need to have a public purpose and need to be linked to a cost-benefit ratio to fund practices that can do the most with limited funds.
- Cost sharing with the farmer.

Multiple benefits

- Fund projects that are cost effective and have multiple benefits. like water storage, habitat/pollinators, water quality.
- Multiple benefits (Mentioned twice)
- wetland restorations that have multiple benefits

Prioritizing & Targeting

- Ground water, lakes, then streams. Prioritize by what people use the most. Drinking water first. Lakes second, rivers third.
- Funding should be tied to projects that have a chance to make a difference in the watershed. For example, sealing wells makes a difference to protect groundwater from contaminants. Focus on specific water bodies that are priorities for the most people. Bass Lake and Madison Lake are examples. The problems of the Le Sueur River itself are so complicated and it would far more money than will ever be available to "Fix" the issues. Focus on important water bodies first.
- Find where the highest erosion/nutrient run off is taking place and start there
- Prioritize the source or upper watersheds to take care of where it is coming from
- There needs to be a plan and priorities (I mean specific, not the current plan which is general in nature). Shotgunning conservation all over the landscape has produced very minimal results over the past 50 years. You can't simply engage in conservation by the willing, you need to identify priorities and work on fixing them regardless of what the initial reception of the landowner is.

Priority areas

- Identify high priority areas that are impacting the quality of water and put the money toward projects that will have the greatest impact.
- Based on a combination of science and stakeholder support. Active outreach and advertising should be targeted to priority areas or priority practices that have the best return on public investment. However, there needs to also be opportunity for landowners taking initiative in the rest of the watershed. Just because someone does not live in the priority area does not mean their project would not help the Le Sueur Watershed as a whole.
- Prioritize where people live and recreate
- Additionally look at some potential easements in priority areas that would benefit or reduce flooding of communities and pay these folks accordingly to get it done.
- Individual stream bank projects should not be a priority. They are costly and benefit just a few people instead of the greater watershed. Fund projects that solve things or prevent pollution.
- Lakes. Rivers. Wetlands. Boat launches. Trails. Parks.

Subwatershed Focus

- Focus on the smaller sub-watersheds. Improvement projects that focus on lakes, small streams, wetlands, ditchsheds that can improve things locally for local priorities should be done. Fixing things for the MN river or Lake Pepin is too daunting of a task and not achievable.

Decision Making & Authority

- If the majority of urban citizens agree that something needs to be done then they should start with urban areas. Likewise, if the majority of rural citizens agree that something needs to be done, then they decide upon that action. No one entity should have control and be able to decide what should be laid out as far as action. All action should cease and be decided upon via vote. Period.

Ag-Urban

- Stop always putting the farmers first. Take care of the environment and land for future generations.

- Rural first. Urban last. This new funding must focus on agriculture.
- I would like for once to give smaller farmers an equal share. Too few get too much and do too little.

Education

- I think future efforts should be on educating landowners/cities about their local resource(s) and how they can help protect them. In the case of a Designated Wildlife Lake (one of only 70 in the state), there should be special protections to ensure its purpose is for wildlife habitats, not human recreation or development. While cities are going to continue to grow, wildlife and the quality of the water shouldn't suffer for it.
- I'd like to see the Planning and Zoning offices within the watershed provide educational offerings (mailers, website, etc.) to property owners focused on the regulations and best practices of shoreland management.
- Active outreach and advertising should be targeted to priority areas or priority practices that have the best return on public investment.
- More recreational activities that would incentivize people to keep the waterways clean and not looked at as dumping grounds.

Regulation

- Focus on State regulations
- Keep Federal government out of this except for funding resources. Fed involvement always screw it up.

1W1P Process

- There are now many examples of other 1W1P watersheds that have been launched. Learn from these!!! Do not make the same mistakes! Governance is the number one problem as evidenced by the Watonwan 1W1P. Out of the gate, the Blue Earth County Attorney messed it up. Now initially much of the money goes to Blue Earth County. Fairness must prevail. I have still not seen the ACFP/PMT model on the alleged locations of "practices" that should be installed in the Watonwan. Why??? BSWR has been a poor leader. Do not assume they are your friend. Sure we get a lot of money all of a sudden, but are we ready? There are many other issues, but it is too hard to explain here. I doubt if anyone cares anyway. My presence at your session would not be welcomed. Expect little and hope for the best, but at least you get more money than before. Local control is always the best, but, unfortunately, this system puts you further away. Good luck.
- I don't know enough about the process to offer a suggestion.

Pests

- Reward hunters and trappers for getting rid of muskrats and other animals that are pests

Appendix G: General Advice

Do you have any other thoughts, ideas or concerns that you would like to share about the Le Sueur River Watershed One Watershed One Plan development?

Education & Outreach

- This is an opportunity to bring together all of interests in the watershed to make a long lasting, positive impact!
- I hope the plan will work with farms and farmers and really look at keeping our area a place where profitable farming still is encouraged for the future of our communities and schools
- Involve farmers and citizens to develop solutions and determine priority areas. major changes will be needed to measure improvements in water quality.
- Please start making the farmers and landowners interested in offering plans that will be positive and cost attainable. Make them water quality allies.
- The Agency folks know these programs backwards and forwards which puts citizen-control at a huge disadvantage. But the citizens must participate and speak up. Do not duplicate efforts. Recognize that communication to farmers and landowners is our greatest failure. A conservation consultant dedicated to communicate, educate, demonstrate, focus, and deliver the models and knowledge will be your best investment if managed locally while trying desperately to wade through the horrible bureaucracy. Good luck!
- Need more people on the landscape to work one on one with landowners to develop meaningful projects and outcomes. We spend too much time and money on monitoring, administration, and targeting and not enough time getting practices put on the ground

BMPs

- No Mining in Shoreland, Larger Buffers (100') adjacent to water bodies, More Created Wetlands and Habitat needed
- Dredging Bass Lake, remove tile surface intakes, septic system on north side of Bass lake need at minimum inspection. Dam operation on Rice Lake is a tool not being utilized. Farmers are more willing to install grass waterways etc when they see the DNR doing their part. Currently Rice Lake Dam is causing most of the steam bank erosion- frustrating. Watching that dam being mismanagement and then forcing buffer strips on landowners is hypocritical.
- Water storage and wetland restoration have multiple benefits. Projects that do multiple things should be prioritized

Technical Assistance

- Assistance (knowledge or financial) in getting erosion control to remote areas inaccessible by truck.

PLAN

- Keep it simple
- Make the plan concise and readable/understandable to the average citizen.
- I'd like the 1W1P to focus on setting tangible and measurable goals that can be reviewed to determine if they are being successful.
- I'm glad someone's working on a watershed plan. We need it. The land-use feels out of control to me.
- Don't make this just another plan that will sit on a shelf in some dark corner, make it something that gets priority practices done. Looking at other 1W1P funds it appears the money is there to do projects, make priorities and set goals to get them done.
- We spend too much time and money on monitoring, administration, and targeting and not enough time getting practices put on the ground

Approach & Process

- I hope there can be collaboration so that we have a concerted effort to improve water quality since it's all from the same source.
- Build on existing successes....use priorities from existing County, Local, State, and Federal Plans. Infrastructure like stormwater in cities is important but that should be done with existing programs and regulations. Stormwater for new development should not be through this plan. Retrofitting older areas with no stormwater management or going above and beyond what is currently required should be considered, but developers should not benefit from clean water funds to do what they already should be doing.
- Get the majority vote on any action to be taken. It's the right thing to do.
- Be flexible & open
- Don't create divisions between agriculture and outdoorsmen. We often are the same, but fingers get pointed and then the natural defense goes up.

Governance & Regulations

- Each county is now giving up its local control for community, watershed control. This will have negative ramifications. Governance is the critical problem that no one talks about, least of all BSWR. There are many other examples for you to draw upon. BSWR is not your friend. The money allotted and spent should be proportional to the counties acres. This program should be for agriculture. Be aware of many other overlapping programs that also fund your watershed. Already we are helping to subsidize the Depart of Health.
- Due to a proposed development, we have been a part of the discussion when the Eagle Lake City Council adopted a new shoreland ordinance for Eagle Lake. Some modified documents indicating "industrial" was permitted when it was NOT put up a red flag as to whether certain conditions were going to be followed. Some residents further south (in city limits) are concerned that if the proposed project is approved, the modified landscape from crop land will allow more flooding (then what they currently experience) from runoff and lake levels.

Quicker Pace

- Been at it for decades, time to step it up
- Be quicker. Too little too late.
- Efforts in Waseca County need to be headed by the SWCD. The Planning and Zoning department does not have the expertise to enact any part of the plan.

Work watershed-wide

- I think everywhere we need to drastically make a change to better improve our water/natural resources

Prioritizing

- There are a lot of identified existing local priorities throughout the watershed. Even if they are not prioritized for funding for the clean water fund, the priorities should be listed so that other funding mechanisms or funding streams can be pursued.
- For best chances of successful implementation and local support, I feel there should be a priority area in each County.

Climate change

- People react to what is the most recent concern or issue. Drought may be something people are thinking of now but looking big picture at increased precipitation is something that should be given more weight than recent weather.

Impaired Watershed

- If you go upstream from the dead zone in gulf and take the dirty fork at every confluence, I think you would come to the Le Sueur. I think that makes this watershed crucially symbolic for others facing the same issues.

Plan Outcomes

- Went to the meeting tonight at New Richland, hope that common sense will come from all this - I hope the plan will work with farms and farmers and really look at keeping our area a place where profitable farming still is encouraged for the future of our communities and schools. We need many people out here living and working and calling this place home.

Drainage

- Charge a fee to all ag drainage.
- Drainage related to human land use is the problem whether ag or city.

Thank you

- I am looking forward to making things better.
- Thank you for assisting with these water quality efforts.
- Thank you for your continued efforts.
- Thank you for the opportunity to take the survey and submit comments. I am unable to attend the meeting tomorrow night as I have to jump between a daughter's sporting event and another meeting.

G

APPENDIX G: MIDPOINT MEETING AND SURVEY SUMMARIES

G

APPENDIX G: MIDPOINT MEETING AND SURVEY SUMMARIES

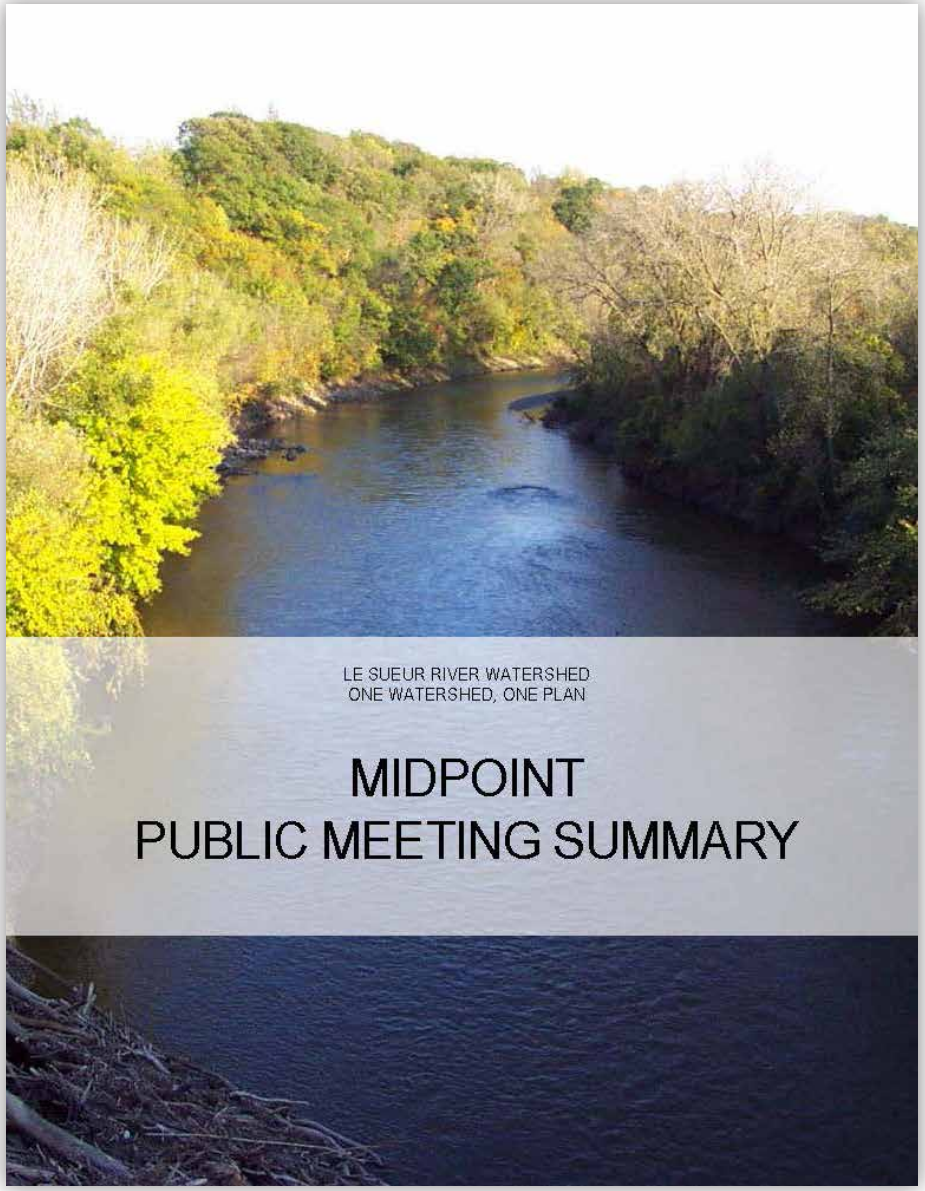
Introduction

The public midpoint meeting was held on April 4th, 2022, at Pemberton Main Street Plaza in Pemberton, Minnesota. The meeting was planned and hosted by WRC. Approximately 75 people attended the meeting, representing a variety of communities throughout the Watershed.

Due to lingering impacts from the COVID-19 pandemic, an online survey was also available to reach those who preferred to weigh in online, as well as those who attended the midpoint meeting and wanted to provide additional feedback.

Both in-person and online survey summaries are provided in this appendix.

Check out this information online!
bit.ly/appendixG_LSRW



LE SUEUR RIVER WATERSHED
ONE WATERSHED ONE PLAN

MIDPOINT MEETING SUMMARY

TABLE OF CONTENTS

Background	p. 2
Issue #1: Water Quality in Rivers and Streams	p. 5
Issue #2: Water Quality in Lakes	p. 7
Issue #3: Erosion	p. 8
Issue #4: Water quantity, Rate, and Flooding	p. 10
Issue #5: Wetlands	p. 12
Issue #6: Leadership	p. 13
Issue #7: Bacteria	p. 14
Issue #8: Shorelands and Riparian Areas	p.15
Issue #9: Drinking Water and Groundwater Protection	p. 17
Priority Issues Board	p.19
Meeting Evaluation	p. 20

REVIEW DRAFT
May 2022

WATERSHED PARTNERSHIP
The Le Sueur River Watershed One Watershed One Plan planning partnership includes Blue Earth County, Blue Earth Soil and Water Conservation District, Waseca County, Waseca Soil and Water Conservation District, Faribault County, Faribault Soil and Water Conservation District, Freeborn County, and Freeborn Soil and Water Conservation District.

Prepared by Water Resources Center, Minnesota State University, Mankato

135 Trafton Science Center South. Mankato. MN 56001

BACKGROUND

This report is a summary of a public engagement component of the Le Sueur River Watershed, One Watershed One Plan (1W1P) planning effort. The main objective of the public engagement effort is to give residents and stakeholders the opportunity to provide input and identify important issues and concerns related to watershed health. As part of the Le Sueur 1W1P process, project partners invited watershed residents to provide input on the plan at two public meetings—a kickoff and a midpoint meeting. An initial step in the process for developing the Le Sueur River Watershed 1W1P was to host a public kickoff meeting to listen and learn from watershed residents and stakeholders. The public kickoff meeting was held September 16, 2021 at St. Olaf Lake Park near New Richland, MN.

Midpoint Meeting

This document summarizes public feedback from the midpoint meeting. The public midpoint meeting was held on April 4, 2022 at Pemberton Main Street Plaza in Pemberton, MN. The meeting was designed to update the public and allow interested parties to weigh in on the planning process to help frame issues and shape planning efforts. Citizens who provided input at the beginning of the planning process (kickoff meeting) had the opportunity to review how citizen perspectives were incorporated into and shaped plan content so far. The midpoint meeting began with a welcome by planning partners and an overview of the 1W1P process overall and the progress to date. The meeting focused on strategies to address priority resource concerns. The bulk of the meeting centered on facilitated small group conversations where participants discussed the questions listed below related to each resource concern. Approximately 75 people attended representing many different communities and diverse viewpoints from across the watershed.

Resource Concerns

The meeting was organized around the primary resource concerns that form the framework for the plan. Meeting attendees were able to provide comment on two different resource concerns at the meeting. If they were interested in reviewing and commenting on additional resource concerns, they were able to provide input via the online survey.

ISSUE #1: WATER QUALITY IN RIVERS AND STREAMS

ISSUE #2: WATER QUALITY IN LAKES

ISSUE #3: EROSION

ISSUE #4: WATER QUANTITY, RATE, AND FLOODING

ISSUE #5: WETLANDS

ISSUE #6: LEADERSHIP

ISSUE #7: BACTERIA

ISSUE #8: SHORELANDS & RIPARIAN AREAS

ISSUE #9: DRINKING WATER & GROUNDWATER PROTECTION

Discussion Questions

The bulk of the meeting centered on facilitated small group conversations where participants discussed the following questions:

PRIORITY AREAS
Do you have any questions or concerns about the priority areas identified? This is a ten-year plan and state funding will be focused in these areas first.
Do you suggest any changes? What would you change and why?

STRATEGIES
Broadly, do you think this list of strategies make sense? Are there any missing?
What are your top 2-3 priority areas that you would like to see focused on?

SUPPORT?
Overall, would you support this content moving forward?
Do you have any questions or concerns?
If you do not support the content as is, what would you like to see changed?

QUESTIONS?
Do you have any other questions or concerns?

Online Survey

Due to the covid pandemic, an online survey was also available to reach those who preferred to weigh in online. The survey was developed in collaboration with planning partners to gain citizen input about watershed resource concerns. The survey design conveyed the same questions asked at the midpoint meeting. The goal of The 49-question survey was to offer citizens the opportunity to weigh in on any or all of the resource concerns of interest to them. It included both open and closed-ended questions to gain general input about citizen perspectives. There were 78 survey respondents, primarily rural and city residents from Blue Earth and Waseca Counties.

Planning Partnership

The Le Sueur River Watershed 1W1P planning partnership includes Blue Earth County, Blue Earth Soil, and Water Conservation District, Waseca County, Waseca Soil and Water Conservation District, Faribault County, Faribault Soil and Water Conservation District, Freeborn County, and Freeborn Soil and Water

Conservation District. The midpoint meeting was planned and facilitated by the Water Resources Center at Minnesota State University, Mankato for the 1W1P planning partnership.

Meeting participants were asked to indicate where they live in the watershed. The map points above depict the geographic distribution of attendees from all across the watershed that attended the Le Sueur River Watershed One Watershed, One Plan midpoint meeting in Pemberton, MN.

ISSUE #1: WATER QUALITY IN RIVERS AND STREAMS

PRIORITY AREAS

Do you have any questions or concerns about the priority areas identified?
This is a ten-year plan and state funding will be focused in these areas first.
Do you suggest any changes? What would you change and why?

- Priority areas are ok
- Fishing rivers and streams

What are your top 2-3 priority areas that you would like to see focused on?

- Cobb River, CD 26, CD 83, JD 27
- Cobb River raised 5' over the CD 95 crossed watershed boundary dike between watershed boundaries
- Fishing quality/ fish habitat
- Invasive species and what they are doing to water quality - Curly leaf pond weed and Eurasian milfoil
- Nutrients washing into lakes natural filtrations
- No settling ponds & more tilling & rapid run off
- Water retention as a means of improving stream water quality and fish community
- Smallmouth bass in the Le Sueur, Cobb, Little Cobb, and Maple Rivers

STRATEGIES

Broadly, do you think this list of strategies make sense? Are there any missing?

- Yes, watershed storage & BMPs on Ag land are my best methods & conservation drainage

Which approaches do you think people living in this watershed would be most willing to do?

- Reduced tillage and strip tillage
- Farmer groups to go over storage
- Education for cover crops
- Farmer-led groups are best
- Improve soil health, BMP's

What approaches would you like to see prioritized in this plan? What top 2-3 strategies would you prioritize?

- Win-win solutions
- Creative solutions
- Easier initiatives for landowners for quicker and easier implementation
- Cover crops
- Reduce tillage or soil health
- Water storage, outreach & education, improve soil health
- Storage basins- deeper- more storage
- Manure applications and setbacks
- Seeding issues, time issues, technology enhancements be ahead

SUPPORT?

Overall, would you support this content moving forward?
Do you have any questions or concerns?
If you do not support the content as is, what would you like to see changed?

- Try to reduce the increase in bureaucracy
- Not to get bogged down with technicalities
- Yes, support it
- Not enough money to make a difference

QUESTIONS?

Do you have any other questions or concerns?

- What funding is needed to make a difference? Is 800k enough to make a difference?
- Are there enough willing landowners
- Comparison of historical conditions/biological communities to modern ones -- does the public know what our lakes/rivers should look like?

ISSUE #2: WATER QUALITY IN LAKES

PRIORITY AREAS

Do you have any questions or concerns about the priority areas identified?
This is a ten-year plan and state funding will be focused in these areas first.
Do you suggest any changes? What would you change and why?

- Madison Lake

STRATEGIES

Broadly, do you think this list of strategies make sense? Are there any missing?
What are your top 2-3 priority areas that you would like to see focused on?

- Lake water quality
- Lake weeds are an important issue
- Curly leaf pond weed and Eurasian milfoil
- Invasive species and what they are doing to water quality
- Nutrients washing into lakes natural filtrations
- Fishing quality/ fish habitat

- Innovative solutions
  - Stocking retention ponds with fish
  - Storage! Needs storage even if wetlands are not feasible or accepted by landowners
  - WASCOBS and farmable wetland areas that farmers don't take out of production but allow temp storage
- Initiative with Madison Lake & Score Your Shore
  - Model in Madison Lake Park for demonstration
- Farm on hill on lake to target, target areas like this that will make a real difference
- North American Fisheries Association doing study on BE river- changes to fish

SUPPORT?

Overall, would you support this content moving forward?
Do you have any questions or concerns?
If you do not support the content as is, what would you like to see changed?

- Not to get bogged down with technicalities
- Yes, support it

QUESTIONS?

Do you have any other questions or concerns?

- What are the indicator fish species?
  - Rainbow darter, Rock bass, carmine shiner, banded darter, smallmouth bass, Iowa darter, golden redhorse

ISSUE #3: EROSION

PRIORITY AREAS

Do you have any questions or concerns about the priority areas identified?
This is a ten-year plan and state funding will be focused in these areas first.
Do you suggest any changes? What would you change and why?

- Erosion of river banks, causing loss of property, farm land, moving eroded banks down stream
- Ag land contributes too much flow downstream
- Changes to agricultural practices - voluntary doesn't seem to be working. Incentivize cover crops; do not incentivize conventional farming.
- Shouldn't the Maple River and the Le Sueur River be included?
- This topic seems closely linked with water quality
- Cover crops are intensive management

What are your top 2-3 priority areas that you would like to see focused on?

- Reduce volume of water going into downstream areas
- Water storage to store water
- Ravine grade stabilization

STRATEGIES

Broadly, do you think this list of strategies make sense? Are there any missing?

- Suggest Adding: "increase water storage upstream"
- Storage - yes
- I like cover crops and conservation tillage
- Reduce/ remove tiling
- Any way to map farm tiles so we know what's out there?
- Stream & river channel restoration
- Stream bank stabilization after restoration
- Stewardship through BMPs
- Keep things voluntary for landowners

Which approaches do you think people living in this watershed would be most willing to do?

- Cover crops
- We need to give our money only to those who will use cover crops
- Conservation tillage
- Controlled tile drainage
- Storage in public drainage systems
- The best option is always wetland restoration
- Grade stabilization
- CREP
- WASCOBS as last option
- No new mandates
- Voluntary unfortunately, they won't do anything without money (standard corn/bean farmers)

What approaches would you like to see prioritized in this plan? What top 2-3 strategies would you prioritize?

- Water storage, cover crop, water quality, leaving a legacy for future generations so it is not a problem for them
- Water quality, rate, and flooding
- Water holding areas so farm tiles don't drain so fast
- Need to involve drainage authority
- Storage basin- Can be deep, doesn't need to take a lot of acreage out of production
- Storage basins
- Sediment basin - build up & release slowly, monitor over time
- Soil - crops only take up water for three (3) months of the year
- Cover crops
- Incentives for cover crops
- Cover Crop - Farmers and equipment, time involved. Plus, it is a long time practice
- Tillage - minimal change for storage retention (slowing down)
- Restored wetlands
- Wetlands- for storage and water- sediment
- Incentives to retire farming for wetlands
- Education is key- crop type makes a difference
- Need to encourage local people who live and work in the watershed to stay and improve the area
- Too much water- so slow- people assume this is how it always has been- (see Joseph Nicollet accounts)
- Lost 15 odd species from our watershed

Urban Stormwater Management (Mostly from Discussion at Groundwater Table)
The group expressed concern with urban stormwater. Some of their concerns included:

- Urban hard-scope is not managed well in small towns
- Overapplication of fertilizer
- Pet waste being deposited in storm drains or runoff from pet waste in cities and towns.
- The lack of stormwater treatment or storage in small communities.
- The lack of staff in small cities to do education on stormwater.
- The challenge of doing stormwater treatment for many of the existing communities. Retrofitting infrastructure for stormwater systems so that they are not a direct straight pipe was seen as a positive.

SUPPORT?

Overall, would you support this content moving forward? Do you have any questions or concerns?
If you do not support the content as is, what would you like to see changed?

- Keep people working in the county
- I feel farmers and those in the Ag industry should have significant input due to their stake and expertise

ISSUE #4: WATER QUANTITY, RATE, AND FLOODING

PRIORITY AREAS

Do you have any questions or concerns about the priority areas identified?
This is a ten-year plan and state funding will be focused in these areas first.
Do you suggest any changes? What would you change and why?

- Is there enough focus on climate variability?
- Have engineers and experts present various storage options that landowners and others can respond to
- Agree with priority maps
- Areas are good
- Interested to hear more about storage options
- Discussion on Red River Valley strategies would be helpful

What are your top 2-3 priority areas that you would like to see focused on?

- New Richland, CD47, JD6
- New Richland area, Iosco Creek Watershed, CD26, CD83, JD22
- New Richland, Saint Clair
- Streambank bluff, streambank erosion & flooding

- Water storage- where can this be done to get the best bang for the buck?
- Storage possibilities
- Water volume
- Other mitigation strategies

STRATEGIES

Broadly, do you think this list of strategies make sense? Are there any missing?

- Yes (2) makes sense
- Comprehensive
- Storage or slow release of rainwater
- Storage makes sense
- Urban stormwater containment
- Something for limiting tile
- Ditch banks too steep, need to be at least 2:1
- Ditch bank slope, more than 2:1
- Wetland improvements – wetland banks etc.
- Strategic culvert placement

Which approaches do you think people living in this watershed would be most willing to do?

- Water storage in drainage projects
- Ditch improvements paired with water storage (as in a get this for this)
- Storage

- Get more examples of storage structures
- Water and Sediment Control Basins (WASCOBs)
- Continued education
- Educating farmers
- Buffer Strips
- Many people are willing to help, but compensation and awareness are less
- Nothing

What approaches would you like to see prioritized in this plan? What top 2-3 strategies would you prioritize?

- Water storage basins
- Water storage, storage ponds
- Resilience is planning, education, slowing down flows
- Restored wetlands
- Wetlands & strategic culvert placements
- Community Outreach
- CIP - dike east of 13 in New Richland
- Conservation drainage management
- Stormwater
- Urban Stormwater Storage
- Cover Crops

SUPPORT?

Overall, would you support this content moving forward?
Do you have any questions or concerns?
If you do not support the content as is, what would you like to see changed?

- Yes
- Yes, with input from all parties

QUESTIONS?

Do you have any other questions or concerns?

- Where did the priority watersheds come from?
- Water storage - where can this be done to get the best bang for the buck?
- Likes the content but doesn't necessarily feel like they have a place to change anything

ISSUE #5: WETLANDS

PRIORITY AREAS

Do you have any questions or concerns about the priority areas identified?
This is a ten-year plan and state funding will be focused in these areas first.
Do you suggest any changes? What would you change and why?

- Wetland restoration is expensive
- Wetland banks are complicated and take a long time
- Partner with Pheasants Forever or similar groups
- RIM keeps land private using taxpayer dollars
- Protection wetlands we have NRCS vs WGA education & communication

What are your top 2-3 priority areas that you would like to see focused on?

- Bull Run, Cobb River, Rice Creek
- Temporary wetlands - hay or pasture land that can be flooded and compensated
    - Red River valley does something similar
    - farmable basins
    - Compensation would be key accessibility
- Minimal tillage - compaction from rain before crop cover
- Restorations are expensive, is it worth it?
- Wetland Bank help seems a stretch

STRATEGIES

Broadly, do you think this list of strategies make sense? Are there any missing?

- They make sense. Focusing on either more funding or making it more affordable to restore wetlands if possible. Money is a primary deterrent.
- Also, education is one thing but persuasion to get it is another.

Which approaches do you think people living in this watershed would be most willing to do?

- I think wetland habitat appeals to many people due to the wildlife it attracts.

What approaches would you like to see prioritized in this plan? What top 2-3 strategies would you prioritize?

- Storage wetland restoration
- Influencing policy to make it easier for partially drained wetlands to enter programs
- Can things happen faster as an industrial water storage viewpoint?
- Find a way to acquire more money or make it cheaper to restore wetlands

QUESTIONS

- Cobb River - improvements are noticeable. Is this due to wetlands? Handles rain events better than the Maple River now.
- Water storage - do they have to focus on habitat too?
- Any possibility of Trenton Lake for water storage?

ISSUE #6: LEADERSHIP

PRIORITY AREAS

Do you have any questions or concerns about the priority areas identified?
This is a ten-year plan and state funding will be focused in these areas first.
Do you suggest any changes? What would you change and why?

- Water storage is a critical issue for people to understand.
- The importance of getting more water storage across the watershed is the priority.
- Educate farmers. Farmers on land should push for it.
- There should be funding available for it.

What are your top 2-3 priority areas that you would like to see focused on?

- Drainage is the central issue we need to talk about, not the erosion or water quality. Increasing flows due to drainage and climate change is the major driver.
- Experts have all come in to study our watershed from across the country and they all came to one conclusion - we need to store more water on the land.
- We have been talking about this for a decade. Are we finally getting past the discussion phase?
- Are we past talking about it now and finally moving forward?
- In the future, climate should be part of the discussion. It will be major driver. We need to assess all of our actions and our impacts related to mitigating climate change.

STRATEGIES

Broadly, do you think this list of strategies make sense? Are there any missing?
Which approaches do you think people living in this watershed would be most willing to do?
What approaches would you like to see prioritized in this plan? What top 2-3 strategies would you prioritize?

- Conducting one-on-one landowner outreach is the most critical approach to make a difference. Local staff should reach out and get to know farmers and other watershed residents and build relationships.
- Focusing on water storage should be the number one strategy.
- Promoting soil health practice adoption should be another central strategy.
- Keep hosting information like the Le Sueur Network meetings to bring people together, to learn about the watershed, discuss things, and prioritize action.

SUPPORT?

Overall, would you support this content moving forward?
Do you have any questions or concerns?
If you do not support the content as is, what would you like to see changed?

- Generally, support for direction

ISSUE #7: BACTERIA

PRIORITY AREAS

Do you have any questions or concerns about the priority areas identified?
This is a ten-year plan and state funding will be focused in these areas first.
Do you suggest any changes? What would you change and why?

- Note from small group facilitator: The group was all farmers or worked in Ag drainage. They felt the number of feedlots has decreased and that there was less manure applied, and feedlots were more spread apart.

STRATEGIES

Broadly, do you think this list of strategies make sense? Are there any missing?
Which approaches do you think people living in this watershed would be most willing to do?
What approaches would you like to see prioritized in this plan? What top 2-3 strategies would you prioritize?

- Group agreed that bacteria source assessment is a good idea. Need to better assess wildlife as a source.
- Intakes at fields with applied manure should be replaced with denser pattern tiles.
- Waseca county already is more restrictive than state rule for manure applied setbacks.

SUPPORT?

Overall, would you support this content moving forward?
Do you have any questions or concerns?
If you do not support the content as is, what would you like to see changed?

- Overall group noted that area already has great programs. There are few straight pipes, no unsourced communities, farmers follow manure management plans.

ISSUE #8: SHORELANDS & RIPARIAN AREAS

PRIORITY AREAS

Do you have any questions or concerns about the priority areas identified?
This is a ten-year plan and state funding will be focused in these areas first.
Do you suggest any changes? What would you change and why?

- Buffers
- Maple River and Le Sueur River should be included
- Big rocks aren't efficient (alternative solutions)
- Maple & Le Sueur included into map for shorelands

What are your top 2-3 priority areas that you would like to see focused on?

- Buffers, Native plantings, rain gardens- Le Sueur Co Rd 8
- Rain gardens
- Buffers & native plants

STRATEGIES

Broadly, do you think this list of strategies make sense? Are there any missing?

- Yes, rain gardens
- Outreach & education involving lake / lakeshore associations is very important
- Include smaller groups
- Ditch or streambank re-sloping

Which approaches do you think people living in this watershed would be most willing to do?

- Education
- Outreach and education
- Support volunteer groups - like lake associations
- Native plantings
- CREP- mandatory restitution
- Riparian restorations with funding such as CRP and CREP

What approaches would you like to see prioritized in this plan? What top 2-3 strategies would you prioritize?

- Push education
- Show benefits of changes to educate
- Buffers/ rain gardens
- Buffer installations on lakes and rivers
- Native plantings
- Streambank restoration
- Repair & restoration - pay landowners more

SUPPORT?

Overall, would you support this content moving forward?
Do you have any questions or concerns?
If you do not support the content as is, what would you like to see changed?

- Yes, stream bank re-sloping?

(Note from small group facilitator: Not sure what is meant by this. I see it as something that would just wash out & not do much to solve any problems)

ISSUE #9: DRINKING WATER AND GROUNDWATER PROTECTION

PRIORITY AREAS

Do you have any questions or concerns about the priority areas identified?
This is a ten-year plan and state funding will be focused in these areas first.
Do you suggest any changes? What would you change and why?

STRATEGIES

Broadly, do you think this list of strategies make sense? Are there any missing?

- The group talked about the importance of sealing wells. They all expressed concerns with preserving the groundwater quality.
- One resident expressed concerns about his concerns with threats to groundwater from leaking underground storage tanks and spills from industrial types of land use.
- The group talked about the importance of water well testing and education related to arsenic and other potential contaminants. They discussed that it would be helpful to have water tests conducted before people purchased properties. One elected official mentioned that she was aware of realtors that have water tests completed as a common practice to help ensure that people know what their drinking water is like before buying properties. All of the group thought that would be a good practice to support. They also mentioned that there are limited parameters that are typically tested for and that only nitrates, bacteria and arsenic are tested for when a new well is drilled. Education on drinking water seemed to be the consensus on ways to help this issue.
- The group talked about the need to ensure that people know where and how to have private wells tested.
- Citizen expressed concerns about water quantity and that we don't have an unlimited supply of groundwater.
- Expressed concerns with flowing wells and the loss of groundwater with flowing wells in Faribault and Freeborn Counties. Blue Earth County staff added that in Blue Earth County there are a number of flowing wells that have been identified in the watershed also. Flowing wells are not something that has been identified directly in the plan, but that is an issue that they thought should be included.
- Importance of replacing and maintaining septic systems.
    - Talked about being surprised about the lack of focus on septic systems throughout the State and also southern Minnesota. The importance of maintaining septic systems was underscored.
- Discussed importance of replacing septic systems and having funds like revolving loan funds for low interest loans. Talked about the importance of having grants for low income of very low-income persons. Many expressed the need to help low-income, older people afford septic systems. They talked about that with the cost of septic systems that if grants could help bring down the cost for low-income people that would be helpful.

- Discussed importance of water testing in both public and private wells. Citizen expressed concerns with the potential for groundwater-surface water interaction as it relates to both rivers and lakes. For example, the potential for nitrates or other pollutants in rivers and lakes getting into groundwater.
- Talked about the need for long term testing of both private and public wells to better understand any potential issues. Having monitoring wells for both groundwater quality and quantity was something that he supported.
- Talked about arsenic and had a lot of good questions and discussion related to glaciers.
- Talked about the need for education on potential contaminants in drinking water for both small cities and private wells.

PRIORITY ISSUES BOARD

The issues listed below were from a post-it exercise answering the question: "What are the top 2-3 priorities issues that you would like to see addressed in this plan?"

- Water storage
- Water storage
- Water retention as a means of erosion, sediment, fish communities
- Slow down water to the rivers to help control erosion
- Slow down water
- Flood control

- Water quality
- Water quality
- Highest priority - to reduce sediment in river

- Erosion
- Erosion
- Erosion

- Cover crops and soil health
- Cover cropping

- Buffers
- Buffer strips

- Water runoff into lakes
- Shoreland (lakeshore) protection

- Groundwater protection
- Stewardship
- Native fish communities in lakes and rivers

OTHER GENERAL CONCERNS NOTED

(These were found on other post-its and single page notes.)

- Concerns about not wanting to give up farmland
- Cover crops made a difference in holding water back
- Clear out dead trees on the river to help with flow
- Citizen noted that they won't use anhydrous - destructive to soil and susceptible to loss
- Urban Impacts
- Lawn- fertilizer run off, spray & fertilizes too much
- Salt is a concern - not commonly tested for Buffalo lake - rain fed

MEETING EVALUATION

How did you hear about this event?

- Email
- Mailing & email
- Mailing list and Mankato Paddling & Outings Club
- County Commissioner

We are interested in feedback from all interested parties. Who is not here that should be here? Do you have any ideas how we can get them here for future events?

- More urban focus
- Must show them somehow that these issues will affect them or their grandchildren
- Madison Lake Watershed Association (Are they here)?
- DNR
- FSA

What worked? What elements do you think should be included in future meetings?

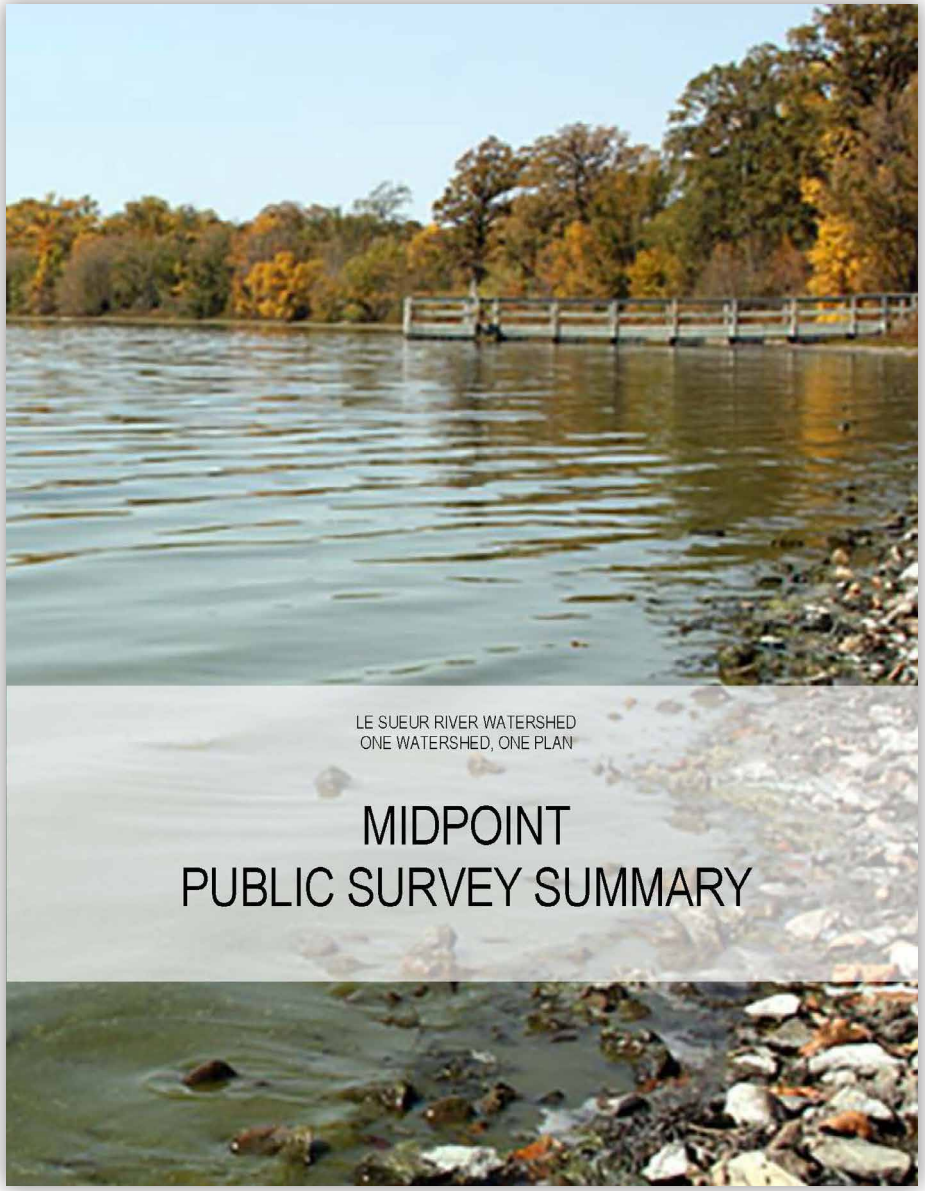
- Very good overall
- Good venue & event with good turnout
- Providing a meal always helps
- Free meal - very good meeting
- Like the format. Possibly try to make sure there is a facilitator at each table if possible. Helped conversation.
- More whole group conversation

What improvements do you suggest for future meetings?

- Field trips to successful projects and/or "ugly" issues
- More education and handouts

Do you have any lingering questions that you would like answered? Anything you would like to learn more about? In future meetings, what issues would you like to discuss with your watershed neighbors and conservation partners?

- Possibly more information to take and review if people are interested



LE SUEUR RIVER WATERSHED
ONE WATERSHED ONE PLAN

MIDPOINT SURVEY SUMMARY

TABLE OF CONTENTS

Background p. 2
Survey Results, Overall Framework p. 4
Issue #1: Water Quality in Rivers and Streams p. 7
Issue #2: Water Quality in Lakes p. 9
Issue #3: Erosion p. 13
Issue #4: Water quantity, Rate, and Flooding p. 16
Issue #5: Wetlands p. 18
Issue #6: Leadership p. 20
Issue #7: Bacteria p. 22
Issue #8: Shorelands and Riparian Areas p. 24
Issue #9: Drinking Water and Groundwater Protection p. 26
Participant Information p. 28

REVIEW DRAFT
May 2022

WATERSHED PARTNERSHIP

The Le Sueur River Watershed One Watershed One Plan planning partnership includes Blue Earth County, Blue Earth Soil and Water Conservation District, Waseca County, Waseca Soil and Water Conservation District, Faribault County, Faribault Soil and Water Conservation District, Freeborn County, and Freeborn Soil and Water Conservation District.

Prepared by Water Resources Center, Minnesota State University, Mankato
135 Trafton Science Center South, Mankato, MN 56001

BACKGROUND

This report is a summary of a public engagement component of the Le Sueur River Watershed, One Watershed One Plan (1W1P) planning effort. The main objective of the public engagement effort is to give residents and stakeholders the opportunity to provide input and identify important issues and concerns related to watershed health. As part of the Le Sueur 1W1P process, project partners invited watershed residents to provide input on the plan at two public meetings—the kickoff and a midpoint meeting. An initial step in the process for developing the Le Sueur River Watershed 1W1P was to host a public kickoff meeting to listen and learn from watershed residents and stakeholders. The public kickoff meeting was held September 16, 2021 at St. Olaf Lake Park near New Richland, MN.

Midpoint Meeting & Survey

This document summarizes public feedback from the midpoint online survey. The public midpoint meeting was held on April 4, 2022 at Pemberton Main Street Plaza in Pemberton, MN. The meeting was designed to update the public and allow interested parties to weigh in on the planning process to help frame issues and shape planning efforts. Citizens who provided input at the beginning of the planning process (kickoff meeting) had the opportunity to review how citizen perspectives were incorporated into and shaped plan content so far. The midpoint meeting began with a welcome by planning partners and an overview of the 1W1P process overall and the progress to date. The meeting focused on strategies to address priority resource concerns. The bulk of the meeting centered on facilitated small group conversations where participants discussed the questions listed below related to each resource concern.

An interested party database was developed and 312 flyers and 461 emails were sent out to diverse watershed constituents to publicize both the survey and in-person kickoff meeting. Local partners also reached out to their constituents via their contact databases and social media channels. Approximately 75 people attended the meeting representing many different communities and diverse viewpoints from across the watershed.

Resource Concerns

The meeting was organized around the primary resource concerns that form the framework for the plan. Meeting attendees were able to provide comment on two different resource concerns at the meeting. If they were interested in reviewing and commenting on additional resource concerns, they were able to provide input via the online survey.

ISSUE #1: WATER QUALITY IN RIVERS AND STREAMS

ISSUE #2: WATER QUALITY IN LAKES

ISSUE #3: EROSION

ISSUE #4: WATER QUANTITY, RATE, AND FLOODING

ISSUE #5: WETLANDS

ISSUE #6: LEADERSHIP

ISSUE #7: BACTERIA

ISSUE #8: SHORELANDS & RIPARIAN AREAS

ISSUE #9: DRINKING WATER & GROUNDWATER PROTECTION

Discussion Questions

The bulk of the meeting centered on facilitated small group conversations where participants discussed the following questions:

PRIORITY AREAS
Do you have any questions or concerns about the priority areas identified? This is a ten-year plan and state funding will be focused in these areas first.
Do you suggest any changes? What would you change and why?

STRATEGIES
Broadly, do you think this list of strategies make sense? Are there any missing?
What are your top 2-3 priority areas that you would like to see focused on?

SUPPORT?
Overall, would you support this content moving forward?
Do you have any questions or concerns?
If you do not support the content as is, what would you like to see changed?

QUESTIONS?
Do you have any other questions or concerns?

Online Survey

Due to the covid pandemic, an online survey was also available to reach those who preferred to weigh in online. The survey was developed in collaboration with planning partners to gain citizen input about watershed resource concerns. The survey design conveyed the same questions asked at the midpoint meeting. The goal of the 49-question survey was to offer citizens the opportunity to weigh in on any or all of the resource concerns of interest to them. It included both open and closed-ended questions to gain general input about citizen perspectives. To give ample time for citizens to fill it out, the survey was online for six weeks ending on April 18, 2022. There were 78 survey respondents, primarily rural and city residents from Blue Earth and Waseca Counties. Survey responses were recorded using Microsoft Forms. Open-ended responses were thematically coded using qualitative social science protocols. This report details the survey findings and summarizes respondent comments that represent a cross section of watershed residents and stakeholders (see participant profile).

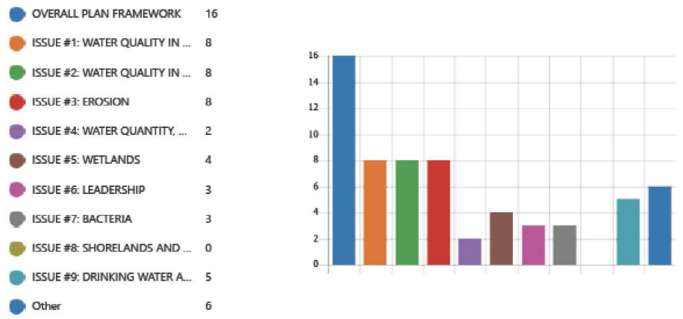
Planning Partnership

The Le Sueur River Watershed 1W1P planning partnership includes Blue Earth County, Blue Earth Soil, and Water Conservation District, Waseca County, Waseca Soil and Water Conservation District, Faribault County, Faribault Soil and Water Conservation District, Freeborn County, and Freeborn Soil and Water Conservation District. The kickoff meeting was planned and facilitated by the Water Resources Center at Minnesota State University, Mankato for the 1W1P planning partnership.

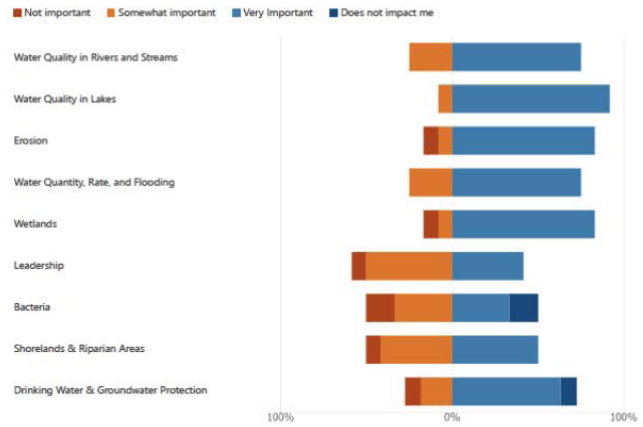
SURVEY RESULTS
OVERALL FRAMEWORK

1. RESOURCE CONCERNS

We welcome your input on one or all of the priority resource concerns listed below. Please select from the list below to learn more and provide input on a particular resource concern or the overall plan framework.



2. OVERALL FRAMEWORK - RANKING RESOURCE CONCERNS
The plan is organized according to the major resource concerns listed below. Please indicate the importance of the resource concern for you.



3. Does this overall framework reflect your primary watershed resource concerns? (Rating scale 1 (low) reflecting to 5 (high)

15
Responses

★★★★☆
4.33 Average Rating

4. Do you have any concerns about this overall framework? If yes, what modifications would you suggest? Please specify below.

- Nope
- No thank you
- Hope that some action takes place to fix the water quality problems
- Make sure that boots have been put on the ground to talk to and get input from farmers, landowners, residents of affected areas. DO NOT just plug info into a computer program and call it GOOD!

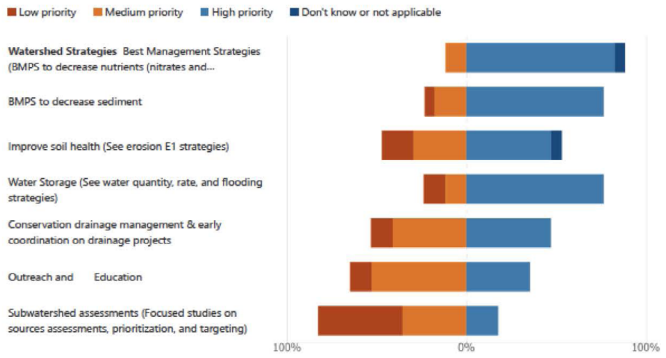
- Not enough expert information. Mostly antidotal information

5. Do you have any comments related to prioritizing and targeting?

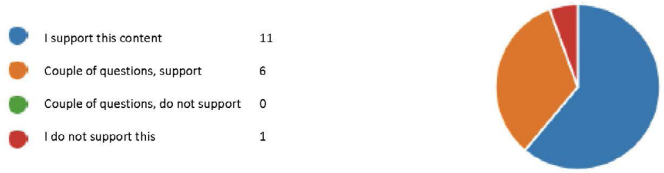
- I would like more information regarding how the priority areas were determined.
- I would like to see Madison Lake helped more. It has a lake association with very little money that seems to do a lot for the lake through education and communication.
- The biggest concern I have is water retention. I would be interested in rolling out new ideas on how to store water that benefits farmers and water quality. New tile technology, rural retention ponds, etc.
- Plan for fixing CD47 and JD6 because this has big influence on flooding of the City of New Richland
- I like it overall
- Hard to control Mother Nature
- I've canoed and kayaked multiple sections of the Le Sueur, Maple, and Cobb Rivers for about 30 years. Actually, that's since I moved back to this area. I'm 70. Back in the 1970's I remember canoeing the Maple and the Cobb numerous times. I've seen a lot of erosion on those rivers over that time - particularly the Cobb and the Le Sueur. I've paddled through sections that had had recent landslides in areas with high bluffs that had obviously covered the entire river and glad I wasn't paddling by at the time. Over the years you also see some changes in river course. There are times that some of the rapids become much milder or almost disappear and we had always assumed it was due to a landslide whose contents filled in around all of the large rocks and boulders that created the large waves we like to play on and paddle through. Sometimes it took an entire season or two for the river to clean them out again so our beloved rapids would reappear. Anyway, yes there is lots of erosion on the rivers in the Le Sueur watershed.

WATER QUALITY

6. Please comment on the suggested strategies to improve water quality in rivers and streams listed below?



7. Reflecting on the overall framework to improve water quality in rivers and streams, please select the statement that you agree with most:



8. Please help us understand your response. What do you like? What do you dislike? What questions do you have, or what do you feel might be missing?

- I feel that this plan hits the most important areas of concern.
- Move this forward.
- I dislike that land use continues to support commercial use and ag use but conservation takes the back seat constantly. Subsidizing corn at the expense of all the erosion and damage to the environment with very little help from the Ag. community. Why aren't companies like COMPEER Financial that are making millions off the land helping pay for conservation
- My only concern is not having enough "teeth" behind the plan to see measurable results. This isn't unique to the 1W1P system but any conservation plan over the years. We tend to rely too much on well-intentioned, well-educated landowners to voluntarily do things on the land and turn a blind eye to those who aren't willing to cooperate and try new things.
- Landowners, farmers, and residents buying in to the plan is essential to the success of these projects. Somebody needs to find, talk to, and educate anyone that does NOT understand what is being planned. If this groundwork is not accomplished and successful, this plan will fail because you cannot force everyone to do what somebody on this project "thinks" needs to be done. Everyone needs to understand and agree to the end goals.
- I feel that ideally all of the listed strategies should be employed. Start on the ones that are the low-hanging fruit to start making progress. Any that involve cooperation with private landowners will be more work and take more time because people do not like being forced into taking actions even if it the cost doesn't come out of their pockets. Work with those that you can and try to convince others by inviting them to see how the strategies are actually working and how it benefits them. I feel the water storage strategy is important in preventing water from wet weather/seasons getting into river and lake basins too quickly, causing erosion and flooding. Although this may be one of the most difficult and costly to implement, all of the other issues grow out of this one - including silting of waterways, chemicals (fertilizer & pesticides) and excessive nutrients getting washed into lakes and rivers and the physical damage and danger from flooding.
- Two one-hundred-year rain- events could happen just five years apart. Some of the strategies may not have as large of an impact in the short term, such as improving soil health or early coordination on drainage projects, but they may be less costly and are still important. Education is not as costly, but it would likely prove beneficial in the short and the long run. I'm not an expert on what practices should absolutely be required or regulated or banned, but if blatantly obvious enough, maybe some regulation should be utilized.
- Making friends with everyone involved is important
- Water storage will not help
- Needs to be an emphasis on urban runoff and water storage. Most small towns do not have water quality or quantity treatment.
- What does it cost to rebuild washed out roads or bridges, or homes and belongings, or to replace vehicles and other items? How about lives? Weather is fickle.

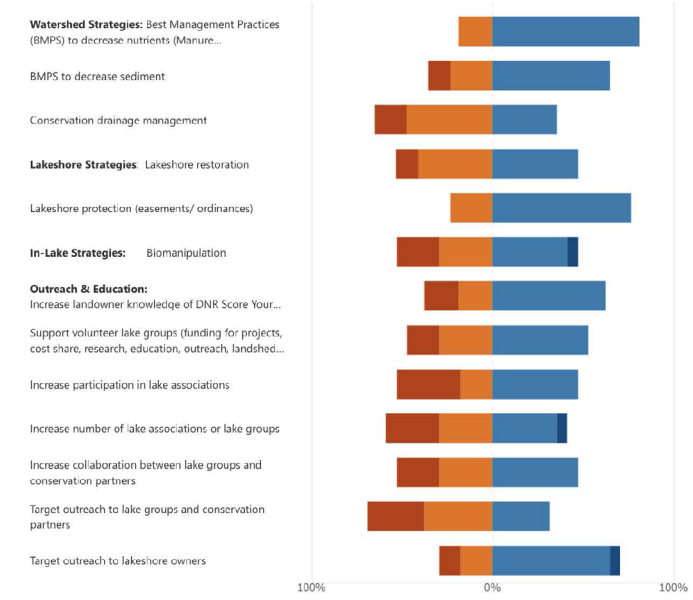
9. Would you like to comment on another resource concern?

LAKES

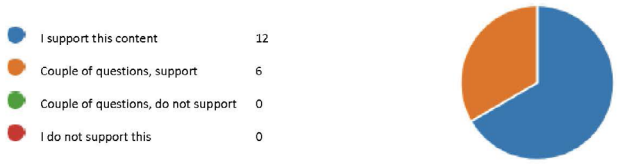
10. Do you have any comments related to prioritizing and targeting lakes?

11. STRATEGIES

Please comment on the suggested strategies to improve water quality in lakes listed below.



12. Reflecting overall on the framework for this issue, please select the statement that you agree with most:



13. Please help us understand your response. What do you like? What do you dislike? What questions do you have, or what do you feel might be missing?

- It is a good framework
- The overall categories for the strategies are well represented, however, the example BMPs are a bit limiting or confusing. My highest priority strategy for water quality in lakes would be a no-till and cover crop program targeted in the watersheds of the seven prioritized lakes (as shown in light yellow in map shown above). This strategy is my highest priority because it is an extremely effective way to drastically reduce the soil and phosphorus loss from farm fields, as well as improving soil health of the field which not only improves crop drought resistance, but also reduces runoff and thereby downstream flooding. In my opinion, the biggest challenge for success in our outcomes for "Water Quality in Lakes" is the most cost-effective strategies will need to be implemented by the farmers who own the fields with their buy-in; and hopefully the program can compensate them so it isn't a financial risk to participate (maybe even a benefit to try on top of potential crop production increase to account for water quality benefit they would be adding). So, with a generally limited number of acres in the Le Sueur River Watershed that feed the 7 priority lakes, the ultimate strategy for each farm will be somewhat be dependent on what the farmer is willing to buy-in on.
- While it is far simpler/easier/cheaper to prevent sediment and phosphorus from binding the stormwater runoff than it is to remove it (and the soil health provides benefits to crop production), not every farmer will be willing to change their main practices, so the other options would need to try and remove the sediment and nutrients with edge of field BMPs. However, hopefully with farmers adopting those win-win soil health practices and having success (with support from the program), others will adopt eventually. So, back to a bit of my limitation/confusion with how to respond with the above options: I would say that a program targeting no-till and cover crop adoption would fit within the watershed BMP strategies for both nutrient and sediment/erosion reduction (even though it isn't listed as one of the examples for BMPs to reduce nutrients). I also don't have a lot of confidence in lake associations being capable of implementing cost effective BMPs, as most of these associations are exclusively

volunteer organizations and have limited expertise and time to manage a consultant and/or construction contractor; as well as less of a sense for what projects would have the most benefit to lake water quality for the cost. However, the lake associations may be a good location to solicit problem area ideas in the watershed (i.e. specific ravines, farm outlets etc.) I could see some benefit in outreach, perhaps in distributing simple one-page sheets on ways lakeshore owners can improve their lake water quality on their property (i.e. no P fertilizers, septic system care, leaf management, etc). Most of these associations have mailing and email lists, and I could see a benefit to send the information both directly to lakeshore owners, and also through the associations.

- The biggest attitude change that I see as an obstacle is the "my lake" attitude. Lake property owners think they own the lake, and like with streams, you're dependent upon good-natured and well-educated landowners to do all the work and people that don't care/don't know can continue degrading a shared resource. This is not a fair deal.
- Again, it's imperative to get user buy-in on these goals and boots on the ground when studies are conducted.
- I think education is key. There are a lot of people who don't even know there is a problem with water quality so if we want to improve lake conditions, we first have to make people aware of the issues and we then need to provide workable solutions, so people know what steps they need to take to improve things.
- Carp, leaves, people, and homes on the lake have a big impact

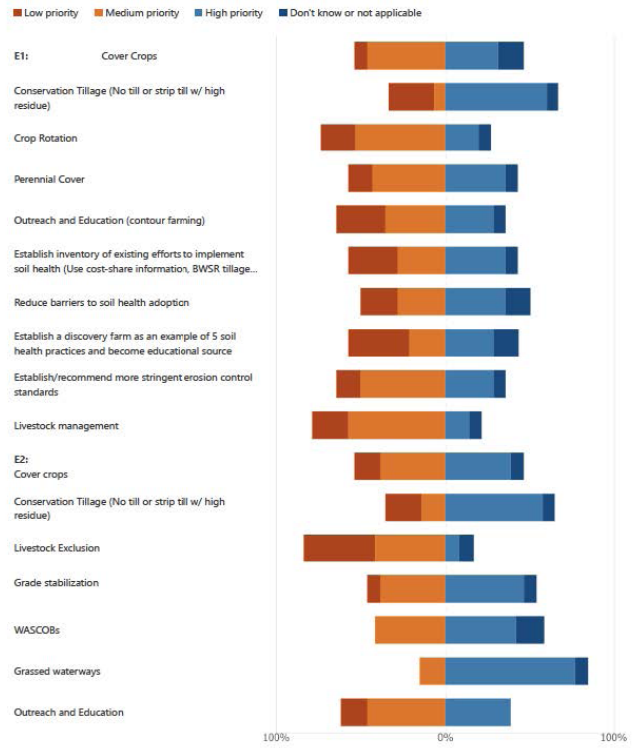
14. Would you like to comment on another resource concern?

EROSION

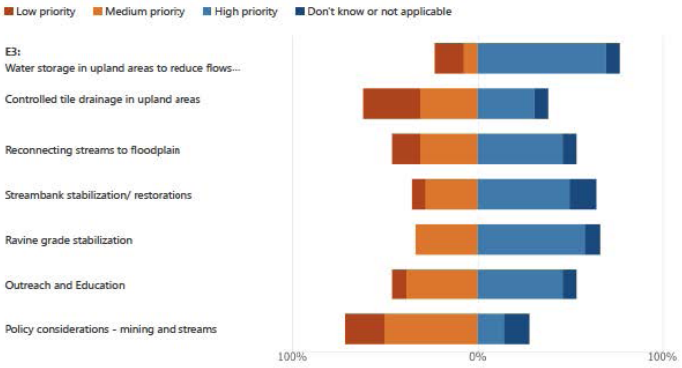
15. Do you have any comments related to prioritizing and targeting erosion?

- No
- Reduce erosion by requiring same buffer requirements on private ditches as is required for county systems and public waters
- This is fantastic! Might be good to also include that a large portion of phosphorus is bound to sediment, so reducing sediment will help with the limiting nutrient in lakes/rivers.
- E1 and E3 are the ones I would suggest being prioritized the most.
- I think that Issue Statement 1 is the most important part of this discussion.
- I would like to know what the funding sources are for landowners and where we find that specific information. We need to have concrete, specific plans and we cannot convince landowners to get on board if we don't have that information.
- 80% of the sediment comes stream bank and near channel sources so that is where the focus should be
- Areas that need to be targeted for erosion control measures are ravine heads. Many of the private control structures that were put in place in the 1950's and 1960's are now at the end of their useable life span and are failing with the high intensity storms that we have been seeing in the recent past.
- There needs to be a funding source to help landowners implement the measures.

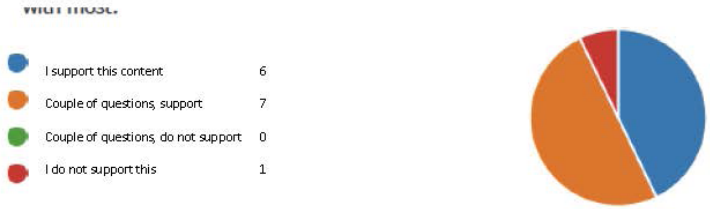
16. STRATEGIES (E1 and E2)
Please comment on the suggested strategies to address erosion listed below.



17. STRATEGIES Continued (E3)
Please comment on the suggested strategies to address erosion listed below.



18. Reflecting overall on the framework for this issue, please select the statement that you agree with most:



19. Please help us understand your response. What do you like? What do you dislike? What questions do you have, or what do you feel might be missing?

- What kind of financial support would landowners be provided to adopt these practices?
- Really like the goal of getting all landowners in the planning area to buy-in to some form of soil health practice. Joining that with the extra targeting of highly erodible lands, as well as the specific areas that flow to the high priority lakes and streams. Lots of good ideas on this one, perennial cover would be the ultimate goal, but is limited with available crops in this area; so the cover crops with conservation tillage (no-till/strip till) is the alternative that will likely be more acceptable to farmers. Also really great idea to have a discovery farm, and also a better inventory of farmers currently using soil health practices; may be helpful in other farmers buying-in if they know other farmers using these strategies. And I also like that there are plans to bring along farmers that currently using these practices, so they are rewarded, not punished for being early adopters. Along with thoughts on how to keep these practices in use for the long term, to prevent backsliding.
- Education of the farmers and landowners of the costs they will experience with the change from a cash crop to a cover crop is important. They need to know that this is a long-term proposition; not just a couple year plan, where they go back to cash crop planting after they feel that the cost is too high and they see no immediate gain. They need to understand it can be a long term decrease in return for the cash crops and or cover crops they plant to reach the end goal of this project.
- There needs to be more funding available for the grade stabilization structures and ravine stabilization. Landowners are willing to do these practices if there is cost share money available.
- Wetland banking/restoration projects should allow for more excavation for more water storage and they should be set up for a slow draw down and have more space available for the next big rain.
- Science is missing

  [Note: Initial formatting problem with a survey question, WRC fixed quickly when made aware of it]
- Section E3. Only choice is low priority. Why? Your headings in question 17 are all low priority. Is this intentional????? It seems like this survey is not ready to be distributed.
- E3 lists 3 options, and they are all low priority - apparently someone failed to properly edit the survey ratings before issuing the survey.

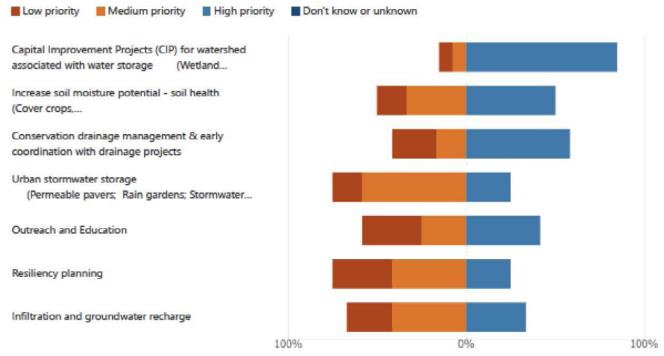
20. Would you like to comment on another resource concern?

WATER QUANTITY, RATE & FLOODING

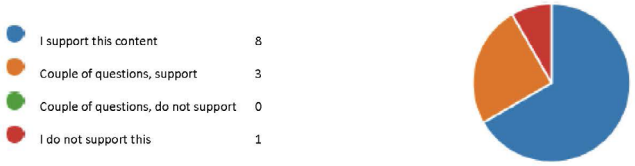
21. Do you have any comments related to prioritizing and targeting?

- No issues
- I would prioritize storage in soil (crop practices) over storage in ponds. With the degree of extreme events that we have been observing, it seems we would be buying a lot of land to build embankments and spending a lot for limited improvement. Whereas soil health practices maintain and improve the amount of farmland, while still storing the water.
- This is a huge issue in my opinion. One of the misunderstandings I've heard from landowners is that tile water flowing into ditches/streams is clear, so it must be clean and not impactful to the stream. This disregards the chemical/microbial qualities of the water and ignores the fact that the quantity and not quality of the water is a major factor in creating sediment pollution.
- The targets seem to be a fair representation of where the flooding has occurred in the past 10 - 15 years.
- No, increased drainage projects seem to be a natural step forward.
- Use science in coming up with projections

22. STRATEGIES:
Please comment on the suggested strategies to improve water quantity, rate and flooding.



23. Reflecting overall on the framework for this issue, please select the statement that you agree with most:



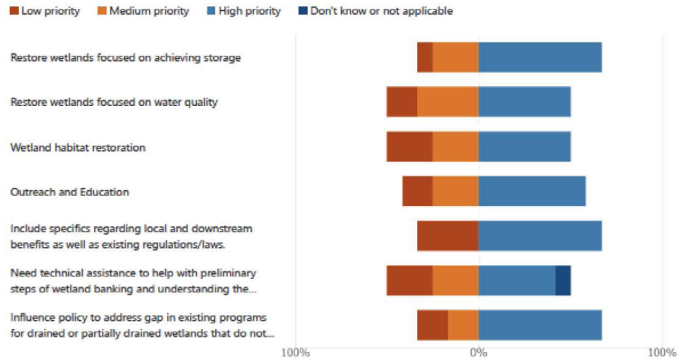
24. Please help us understand your response. What do you like? What do you dislike? What questions do you have, or what do you feel might be missing?

- With some of the extreme events we have observed over the last decade, it seems like we don't have the space or funding to store the volume of water in traditional ponds or embankments... ultimately, improving the soil moisture potential will be better from many different perspectives (volume reduction, water quality, crop drought resistance, air quality, etc), although relief for currently vulnerable properties will be slower to come because it takes longer to get a critical mass of buy-in from farmers in rural areas, and green practices in urban areas. Resiliency improvements could be implemented to help buy time as those practices are adopted.
- If we can maximize the control of water in the outlying areas of the Le Sueur Watershed, we may not have to implement all the planned projects in the areas surrounding these cities.
- The pavers and stormwater ponds help create immediate results. The rain gardens create good community projects.
- Most of the farmland is not the problem Increased rain is the problem What were the issues last year during the drought?
- Well drained soil has the capacity to store and slowly release more water. Include CREP/wetland projects designed specifically for water storage, areas that can hold water and be slowly released after a rain event.

25. Would you like to comment on another resource concern?

WETLANDS

26. STRATEGIES:
Please comment on the suggested strategies to improve wetlands.



27. Reflecting overall on the framework for this issue, please select the statement that you agree with most:

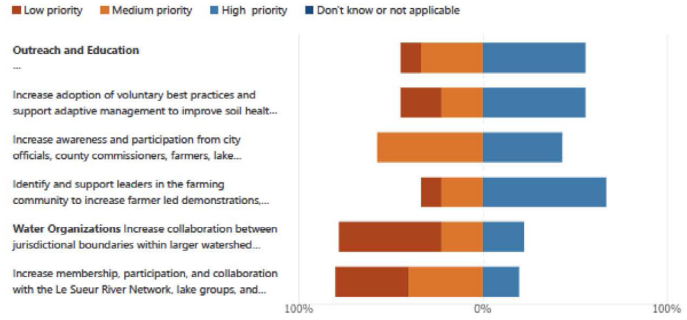
28. Please help us understand your response. What do you like? What do you dislike? What questions do you have, or what do you feel might be missing?

- I think wetlands will be a tool that will be available, but most will be hesitant to reestablish due to the rules associated with removing them if they ever wanted to. So, unless you can force them to reestablish due to evidence laws were broken, it will be a challenge apart from buying the underlying fee on the land first (which will be more costly than other options for most water quality or storage solutions). Support prioritizing education to prevent further loss and efforts to address gaps.
- Water retention is a major hurdle to fixing MN Basin water quality. One idea that I have (may be totally stupid, I'm not sure) is rethinking pond dimensions. Instead of trying to restore natural wetlands (which is certainly good), a bigger impact could be achieved on less land from creating deeper ponds more like urban stormwater retention ponds except on the agricultural landscape. These are not as beneficial to wildlife but pack more of a pound-per-pound punch for water storage.
- Most drained wetlands reappear to hold rain already when it rains
- More landowners would do wetland banking projects but the upfront cost is too much. Also the vegetation and restoration standards can be hard to achieve.
- Wetlands can be a dividing subject. Wetland rules are extremely important - without them we would lose a lot of the last 1% of wetlands remaining.

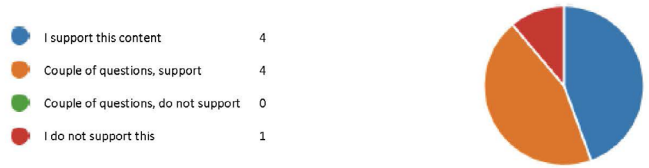
29. Would you like to comment on another resource concern?

LEADERSHIP

30. STRATEGIES:
Please comment on the suggested strategies to address leadership challenges.



31. Reflecting overall on the framework for this issue, please select the statement that you agree with most:



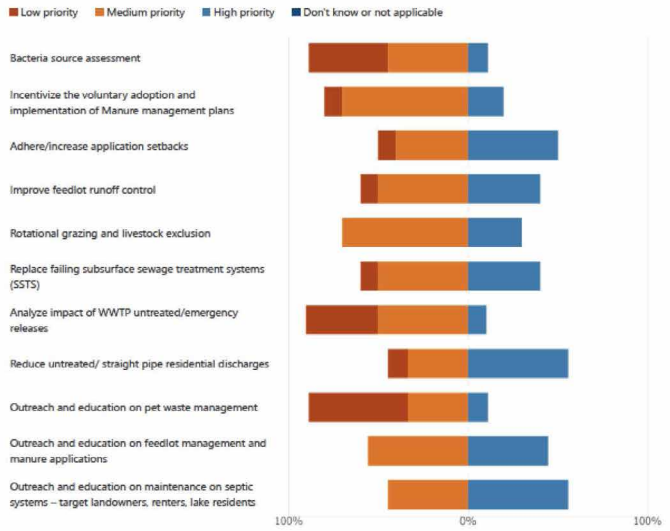
32. Please help us understand your response. What do you like? What do you dislike? What questions do you have, or what do you feel might be missing?

- I like these strategies and think the one-on-one interaction with landowners will be critical to get adoption of these soil health practices. Utilizing the farmer-led field demonstrations will be a huge key as well, perhaps needing a one-on-one to get people to show up to the event, and a follow up to get further buy-in.
- As I've mentioned previously, I understand that voluntary adoption is ultimately the best political way to achieve these goals but I'm afraid it hasn't been enough in the past. Not sure what the solution is but I don't see things getting better very quickly.
- Again, landowner, farmer and citizen buy-in is paramount to the success.
- Most farmers are willing to do the practices if the financial incentive is there.
- Still a challenge to get people to be open to listening, change behavior, and invest in conservation. when farm prices are low there is no spare cash to spend on conservation, when farm prices are high, they want to make money on every acre they can.
- Too much misinformation is being used and not enough science

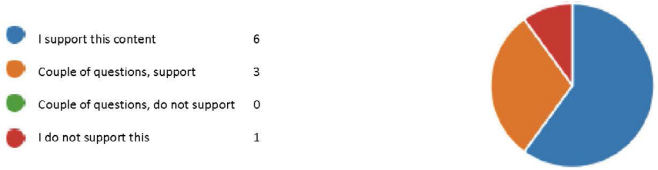
33. Would you like to comment on another resource concern?

BACTERIA

34. STRATEGIES:
Please comment on the suggested strategies to reduce bacteria.



35. Reflecting overall on the framework for this issue, please select the statement that you agree with most:



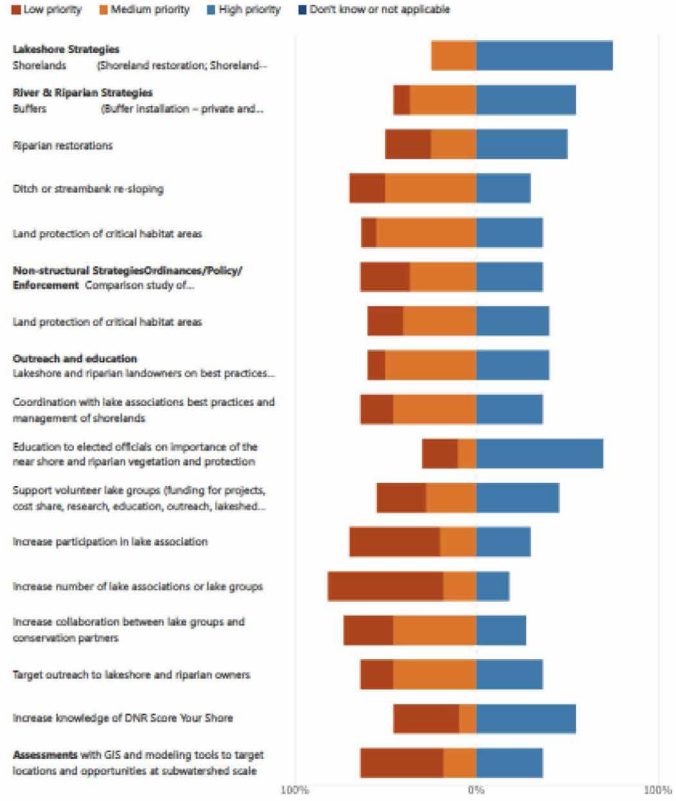
36. Please help us understand your response. What do you like? What do you dislike? What questions do you have, or what do you feel might be missing?

- Livestock in this area has obviously declined a lot over the years. It seems that the pastures left tend to be small and overgrazed but the small number of them is probably not the biggest challenge the watershed is facing. Smarter, more efficient manure application is probably a worthy priority target.
- What is a WWTP? It is not defined. You should not have acronyms in a survey like this. [Waste Water Treatment Plant]
- I believe many of these items are addressed rather well already, so their prioritization is a little skewed by the importance that has been placed on them already, as it should be.
- Bacteria is one of the invisible pollutants - mitigating it generally does not yield a financial benefit to the owner. At least we have already taken care of the bears defecating in our woods.

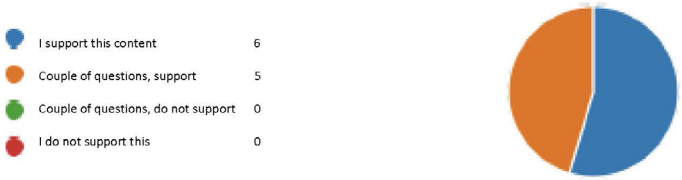
37. Would you like to comment on another resource concern?

SHORELAND & RIPARIAN AREAS

38. STRATEGIES:
Please comment on the suggested strategies to improve shorelands and riparian areas.



39. Reflecting overall on the framework for this issue, please select the statement that you agree with most:



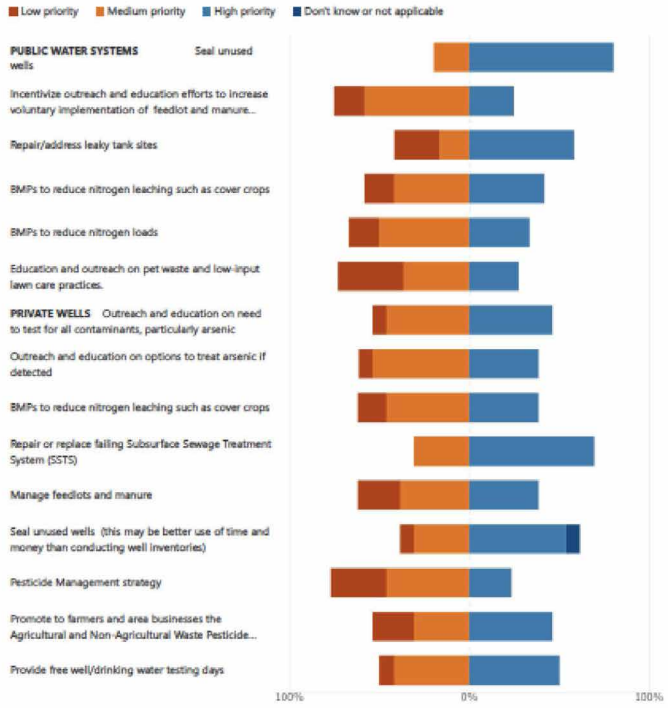
40. Please help us understand your response. What do you like? What do you dislike? What questions do you have, or what do you feel might be missing?

- Stream riparian width seems to be pretty good for the most part, probably less so in headwater reaches. The health of the riparian ecosystem is probably diminished because of high flow and high erosion rates, which can be addressed elsewhere. I see lake riparian health as poor with no solution in sight. I don't see there being any protection or enforcement of a lake landowner doing whatever they want to their shoreline, whether it is good for the lake or not.
- If we can get landowners and lake residents to curb any type of runoff etc., the State and Counties will have to spend less.
- It is difficult to get a property owner to spend money and make changes. Educating them on how to avoid increased impact would be more successful. People will only want to do things if they are not financially responsible for it.
- Lakeshore is one of the places where private landowner rights and the public resource have to have a balance.

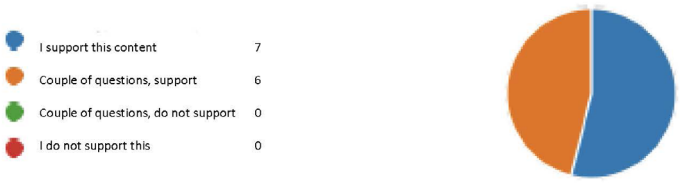
41. Would you like to comment on another resource concern?

DRINKING & GROUNDWATER PROTECTION

42. STRATEGIES:
Please comment on the suggested strategies to improve drinking water and groundwater protection.



43. Reflecting overall on the framework for this issue, please select the statement that you agree with most:



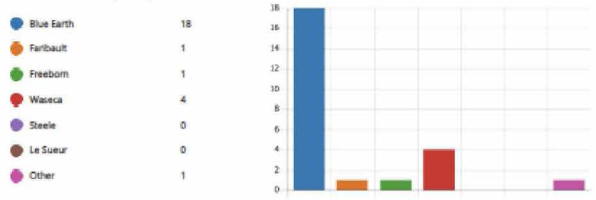
44. Please help us understand your response. What do you like? What do you dislike? What questions do you have, or what do you feel might be missing?

- The issue statement does not address any concern about water quantity!
- Why are we not concerned about overuse or unnecessary wasting of our groundwater resources?
- Would like to see "All flowing wells be provided with flow control capable of stopping the flow." as a Desired Future Condition.
- Would change "Mankato's shallow drinking water wells" to say "Mankato's Ranney collector wells."
- Would add "Install flow control on flowing wells" in the Outcome Section.
- Would add "Flow control of flowing wells" to the Targeting Section.
- Would add "Identify and follow-up on potential unused wells when conducting land use permitting." as a strategy for public water Systems and Private Wells.
- Would move "Seal unused wells" to the top of the list under the Private Wells Section.
- Would add "Promote a multi-jurisdictional (all agencies who should be involved) approach to the wasting (unnecessary) flow from flowing wells" to the Private wells Section.

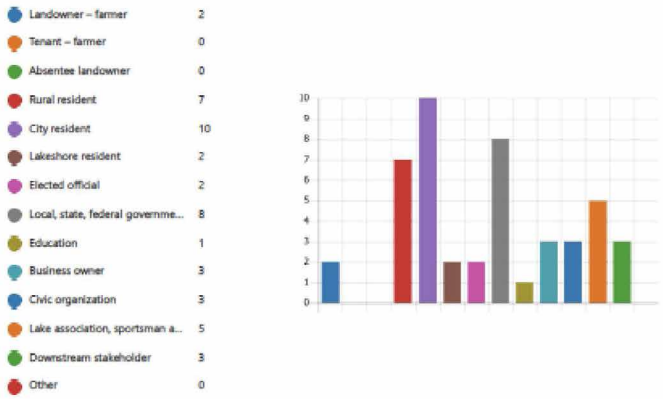
45. Would you like to comment on another resource concern?

PARTICIPANT INFORMATION

46. What county do you live in?



47. Please indicate what represents you best (one or two responses):



48. Which of the following describes your age?

0-17	0
18-30	2
31-50	10
51-70	9
71 or older	2

49. Do you have any other thoughts, ideas or concerns that you would like to share about the Le Sueur River Watershed One Watershed One Plan development?

- I'm hoping we can identify several good strategies to accomplish the goals of the 1W1P, but also hope that the plan doesn't put forth so many strategies that the efforts are too splintered and little actual progress is made. Simple and well supported strategies with lots of contingencies in getting those strategies implemented.
- Increase/education about recreational opportunities in mid-order reaches of area streams, like the Cobb, Maple, and Le Sueur. This can be done through more public water accesses, easements or outright purchases of riparian land so shore anglers can walk along the riverbank and have more fishing opportunities without trespassing, increasing education about some of the gamefish opportunities (catfish, pike, walleye, etc.) and non-gamefish (darters, suckers, etc.)
- Also, we have lost a lot of fish species through extirpation or major population decreases, one particularly important one being smallmouth bass. I don't think the public knows much about this; I certainly didn't until recently.
- Good Start!

H

APPENDIX H: REFERENCES

H

APPENDIX H: REFERENCES

Precipitation Data
wrcc.dri.edu/cgi-bin/cliMAIN.pl?mn8808

MPCA: Le Sueur River Watershed Monitoring and Assessment Report
pca.state.mn.us/sites/default/files/wq-ws3-07020011b.pdf

MPCA: Le Sueur River TMDL
pca.state.mn.us/sites/default/files/wq-iw7-39e.pdf

MPCA: Le Sueur River WRAPS Report
pca.state.mn.us/sites/default/files/wq-ws4-10a.pdf

MDH: Le Sueur River Watershed GRAPS, 2021
An Integrated Sediment Budget for the Le Sueur River Basin, 2011
pca.state.mn.us/sites/default/files/wq-iw7-29q.pdf

USDA: MN NRCS Le Sueur
nrcs.usda.gov/wps/portal/nrcs/mn/technical/dma/rwa/nrcs142p2_023607/

USDA "Rapid Watershed Assessment: Le Sueur"
gberba.org/wp-content/uploads/2015/12/le-sueur-rapid-watershed-assessment.pdf

2017 Blue Earth County Water Plan
bit.ly/BEC_2017WaterPlan

Minnesota Statutes
revisor.mn.gov

Blue Earth County Comprehensive Land Use Plan
bit.ly/BEC_LandUsePlan

Faribault County Comprehensive Land Use Plan
bit.ly/FaribaultCo_LandUsePlan

Freeborn County Comprehensive Land Use Plan
bit.ly/FreebornCo_LandUsePlan

Waseca County Comprehensive Land Use Plan
bit.ly/WasecaCo_LandUsePlan

MN DNR Shoreland Management Program
bit.ly/DNR_ShorelandManagement

MN Wetland Conservation Act
bit.ly/MN_WetlandConservation

MASWCD
maswcd.org

AMC
mncounties.org

LMC
lmc.org

National Historic Preservation Act
bit.ly/NHPA_1966

Minnesota Climatology Office
climateapps.dnr.state.mn.us/index.htm

Midwestern Regional Climate Center
mrcc.purdue.edu

An Integrated Sediment Budget for the Le Sueur River Basin
Gran, Karen and Patrick Belmont, Stephanie Day, Carrie Jennings, J. Wesley Lauer, Enrica Viparelli, Peter Wilcock, Gary Parker, et al. June 2011.

Le Sueur River Watershed (LRW) Groundwater Restoration and Protection Strategies Report (GRAPS, 2021)
Minnesota Department of Health (MDH) October 2021.

Le Sueur River Watershed Stressor Identification Report – Lakes
Minnesota Department of Natural Resources (DNR) May 2021. Prepared by the Minnesota Pollution Control Agency (MPCA)

Assessment Report of Selected Lakes Within the Le Sueur River Watershed Minnesota River Basin
Minnesota Pollution Control Agency (MPCA) June 2010.

Le Sueur Watershed Monitoring and Assessment Report
Minnesota Pollution Control Agency (MPCA) March 2012.

Le Sueur River Watershed Biotic Stressor Identification
Minnesota Pollution Control Agency (MPCA) May 2014.

Le Sueur River Watershed Total Maximum Daily Load
Minnesota Pollution Control Agency (MPCA) August 2015.

Le Sueur River WRAPS Report
Minnesota Pollution Control Agency (MPCA) August 2015.

Minnesota State Statutes
revisor.mn.gov/statutes

Public Input Summary
Water Resources Center, Minnesota State University, Mankato (WRC). November 2021a.

Public Survey Summary
Water Resources Center, Minnesota State University, Mankato (WRC). November 2021b.

Midpoint Public Meeting Summary
Water Resources Center, Minnesota State University, Mankato (WRC). May 2022a.

Midpoint Public Survey Summary
Water Resources Center, Minnesota State University, Mankato (WRC). May 2022b.

APPENDIX I: ACRONYMS + GLOSSARY

I

APPENDIX I: ACRONYMS + GLOSSARY

Acronym	Definition
1W1P	One Watershed, One Plan
ACPF	Agricultural Conservation Planning Framework
AIS	Aquatic Invasive Species
AMA	Aquatic Management Area
AMC	Association of Minnesota Counties
AUID	Assessment Unit Identification Number
BMP	Best Management Practice
BWSR	Board of Waters and Soil Resources
CAFOs	Confined Animal Feedlot Operations
CD	County ditch
CIP	Capital Improvement Project
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CSSR	Collaborative for Sediment Source Reduction
CWMP	Comprehensive Water Management Plan
DEM	Digital Elevation Model
DNR	Department of Natural Resources
DWSMA	Drinking Water Supply Management Area

Acronym	Definition
EAW	Environmental Assessment Worksheets
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentive Program
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FSA	Farm Service Agency
GBERBA	Greater Blue Earth River Basin Alliance
GRAPS	Groundwater Restoration and Protection Strategies
HEL	Highly Erodible Lands
HSPF	Hydrologic Simulation Program—Fortran
HUC	Hydrologic Unit Code
IBI	Index of Biological Integrity
IPC	Implementation Planning Committee
JCD	Judicial County Ditch
JD	Judicial Ditch
JPA	Joint Powers Agreement
JPC	Joint Powers Collaboration

Acronym	Definition
JPE	Joint Powers Entity
LCCMR	Legislative Citizen Commission on Minnesota Resources
LGU	Local Government Unit
LiDAR	Light Detection and Ranging
LMC	League of Minnesota Cities
LRWN	Le Sueur River Watershed Network
LSOHC	Lessard-Sams Outdoor Heritage Council
MASWCD	Minnesota Association of Soil and Water Conservation Districts
MAWQCP	Minnesota Agricultural Water Quality Certification Program
MCBS	Minnesota County Biologic Survey
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MDM	Multi- Purpose Drainage Management
MOA	Memorandum of Agreement
MOSM	Management Option Scenario Model
MPCA	Minnesota Pollution Control Agency
MS4	Municipal Separated Storm Sewer System
MSU,M	Minnesota State University, Mankato
N	Nitrates
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration

Acronym	Definition
NPDES	National Pollutant Discharge Elimination System
NRBG	Natural Resources Block Grant
NRCS	Natural Resources Conservation Service
NWS	National Weather Service
O&M	Operation and Maintenance
OHWL	Ordinary High Water Level
PC	Policy Committee
PCB	Polychlorinated Biphenyls
PFAS	Polyfluorinated Substances
PTMApp	Prioritize, Target, Measure Application
RIM	Reinvest in Minnesota
SDS	State Disposal System
SHPO	State Historic Preservation Office
SSTS	Subsurface Sewage Treatment System
ST	Steering Team
SWAG	Surface Water Assessment Grant
SWCD	Soil and Water Conservation District
TAC	Technical Advisory Committee
TMDL	Total Maximum Daily Load
TP	Total Phosphorus
TSS	Total Suspended Solids
TTP	Township Testing Program
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture

Acronym	Definition
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WBIF	Watershed-based Implementation Funding
WCA	Wetland Conservation Act
WMA	Wildlife Management Area
WPA	Waterfowl Protection Area
WRAPS	Watershed Restoration and Protection Strategies
WRC	Water Resources Center

A

Adaptive Management Process: Adjusting a process based on new information to ensure the best opportunities for success.

Altered Hydrology: Manmade modifications of historic river flows, water levels, and groundwater.

Appropriation: The action of taking something for one's own use.

B

Biennium: A specified period of two years.

Biodiversity: The variety of life in the world or in a particular habitat or ecosystem.

Buffer: A buffer, also known as a riparian filter strip, is vegetated land adjacent to a stream, river, lake, or wetland.

Bylaw: A rule made by a company or society to control the actions of its members.

C

Capital Improvement Projects (CIPs): Projects that are larger scaled, more expensive, and have a longer effective life than the projects typically funded through traditional incentive and cost-share programs.

Chloride: High levels of chloride can corrode and weaken metallic piping and fixtures, give a "salty" taste to the drinking water, damage household appliances, boilers, and, if the water is being used for irrigation, it may inhibit the growth of vegetation

D

Data Aggregation: Data aggregation is the compiling of information from databases with intent to prepare combined datasets for data processing.

Desired Future Condition: The long-term outcome or goal; the attributes (water quality, water availability, habitat quality), the Le Sueur River 1W1P partners are striving to attain, regardless of the time frame. The desired future condition (DFC) sets the direction for planning and future management. It should be described for priority water resources and reflect stakeholder interests.

Drinking Water Supply Management Area (DWSMA): The surface and subsurface area surrounding a public water supply well.

E

Ecoregion: Areas where ecosystems are generally similar to assist with resource management. Various levels of ecoregions are mapped by the EPA to provide broad and more detailed regions.

Easement: A right to cross or otherwise use someone else's land for a specified purpose.

Emerging Issue: An issue that lacks the detailed information that is necessary to assess the current or imminent impact to the resources in the Watershed.

Endangered Species: A species of animal or plant that is seriously at risk of extinction.

Evapotranspiration: Process by which water is transferred from land to atmosphere by evaporation from soil and other surfaces and by transpiration from plants.

Extraction: The use of land for the removal of surface or subsurface sand, gravel, rock, industrial minerals, a nonmetallic mineral, or peat.

F

Fertilizer: A chemical or natural substance added to soil or land to increase its fertility.

G

Geology: The science that deals with the earth's physical structure and substance, its history, and the processes that act on it.

Geomorphic: Relating to the form of the landscape and other natural features of the earth's surface.

Groundwater Restoration and Protection Strategy (GRAPS): Assessment that compiles data on watershed basis and identifies strategies to restore and protect groundwater resources.

H

Historical: Belonging in the past, not the present.

HSPF (Hydrological Simulation Program – FORTRAN): A model for simulation of watershed hydrology and water quality for pollutants. This model was run for the Le Sueur River Watershed during the 2018 Watershed Restoration and Protection Strategy (WRAPS).

Hydrograph: A graphic representation of flow rate versus time.

Hydrologic Unit Code (HUC): A Hydrologic Unit Code (HUC) is assigned by the USGS for each watershed. HUCs are organized in a nested hierarchy by size. For example, the Upper Mississippi River Basin is assigned a HUC-4 of 0701.

Hydrology: The branch of science concerned with the properties of the earth's water, and especially its movement in relation to land.

I

Impairment: Waterbodies are listed as impaired if they do not meet the state water quality standard for designated uses including aquatic life, aquatic recreation, and aquatic consumption.

Impairment: Waterbodies that do not meet the state water quality standard for designated uses including aquatic life, aquatic recreation, and aquatic consumption.

Index of Biological Integrity (IBI): A way of measuring the biological community (fish and aquatic macroinvertebrates) in the water body. The index is a scale of 0 to 100, with 0 being the lowest quality and 100 being the highest quality.

Indicator: A metric, benchmark, or measuring stick used to determine progress towards goals. In some cases, when a metric is not clear or feasible, the indicator might be the number of inputs or outputs themselves.

Intermittent Streams: A stream which ceases to flow in very dry periods.

Issue: Problems, risks, or opportunities for the Le Sueur River Watershed priority resources

J

Judicial Ditch: A ditch whose establishment was ordered by a judge and may be administered either by a single county or multiple counties.

Judicial County Ditch: Public drainage systems located in two or more counties.

K

Karst: A landscape underlain by limestone which has been eroded by dissolution, producing ridges, towers, fissures, sinkholes and other characteristic landforms.

L

Land Acquisition: The act of acquiring land.

Le Sueur Implementation Team (LIT): Local technical staff from participating entities implementing the Plan

Local Government Units (LGUs): The Census Bureau has established five types for classifying government units: county, municipal, township, special district, and school district governments.

M

Measurable Goal: The Le Sueur River CWMP 10-year Plan goal; the quantifiable change in resource condition expected after implementation of the 10-year Plan. The measurable goal should relate to the DFC, and express what percent of progress toward the DFC is intended to be made during the Plan period.

Memorandum of Agreement (MOA): An MOA is a document written between parties to cooperatively work together on an agreed upon project or meet an agreed upon objective. The purpose of an MOA is to have a written formal understanding of the agreement between parties.

Municipal Separate Storm Sewers System (MS4s): A municipal separate storm sewer system (MS4) is a conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, storm drains, etc.).

N

Nitrates: Nitrates in the soil are a primary source of nitrogen which is essential for plant growth.

O

Objective: A general result that a person or local government aims to achieve, relative to a specific issue, within a time frame and with available resources.

Outcome: The specific result of an implementation activity. Collectively, the outcomes from Plan activities should achieve the stated measurable goals. Outcomes may also express changes in knowledge or behavior which lead to actions that contribute to measurable goals.

Output: Countable projects, activities, services, or products. These are often referred to as 'widgets' and are the countable items that are useful for tracking the steps towards achieving the goals. Outputs are not goals in and of themselves because they do not quantify a change in the resource condition.

P

Pattern Tiling: Farmers install tile in agricultural fields to make the soil conditions more uniform, dry up wet spots, reduce erosion and prevent crop roots from rotting during wet periods. This improves crop yields and prevents compaction of the soil; however, there are also adverse impacts that affect water quality and quantity.

Perennial Streams: A stream that has continuous flow of surface water throughout the year.

Pesticide: A substance used for destroying insects or other organisms harmful to cultivated plants or to animals.

Policy Advisory Committee (PAC): One appointed representative from each participating entity Board

Precipitation: Rain, snow, sleet, or hail that falls to the ground.

Prioritize: Determining the relative importance and precedence of the resources and issues in the Le Sueur River 1W1P.

Priority Issue: The agreed upon issues that are identified as the focus of the Le Sueur River CWMP through a prioritization process.

Protect (Management Focus): A minor or subwatershed where the natural resources are generally in good condition, risks to natural resources are low, and the management focus is to maintain and increase protection levels with strategies, such as private forest stewardship and conservation easements.

Protected: Protected land uses include public lands, public waters, wetlands on private lands, buffers required through the buffer law, easements, other conservation lands, Sustainable Forest Incentive Act (SFIA). The SFIA provides annual incentive payments to encourage private landowners to keep their wooded areas undeveloped. Private landowners can receive a payment for each acre of qualifying forest land they enroll in SFIA.

Protection: This term is used to characterize actions taken in watersheds of waters, not known to be impaired, to maintain or improve conditions and beneficial uses of the waterbodies.

PTMApp: The Prioritize, Target, Measure Application is a tool that enables practitioners to build prioritized and targeted implementation scenarios, measure the cost-effectiveness of the scenario for improving water quality, and report the results to pursue funds for project implementation.

R

Resource: A natural, economic, biotic, aesthetic, or similar asset. Resources are generally considered something that can be 'managed' and are generally broad, such as surface water or groundwater.

Resource Concern: A physical, biological, chemical, or geological subset or component of a resource. Resource concerns are typically a refinement of a resource. For example, the resource surface water can be refined into several resource concerns, including streams, lakes, rivers, and wetlands.

Resource Goals: Specific goals related to an individual resource need.

Restoration: This term is used to characterize actions taken in watersheds to improve conditions, and in impaired watersheds to eventually meet water quality standards and achieve beneficial uses of the waterbodies.

Riparian: Relating to or situated on the banks of a river.

S

Source (or Pollutant Source): This term is distinguished from 'stressor' to mean only those actions, places or entities that deliver/discharge pollutants (e.g., sediment, phosphorus, nitrogen, pathogens).

Steering Team (ST): Local technical staff from participating entities

Strategy: A chosen approach that a person or local government implements to meet the objective.

Stressor (or Biological Stressor): This is a broad term that includes both pollutant sources and non-pollutant sources or factors (e.g., altered hydrology, dams preventing fish passage) that adversely impact aquatic life.

T

Target: There are three facets to targeting implementation activities:

- Activity type
- Timing
- Location

Activity type: The BMPs, conservation practices, outreach and education, monitoring, technical assistance or other action that will be the most effective in addressing the prioritized issues.

Timing: The scheduling of implementation activities across the 10-year Plan period, based on which priority issues will be addressed in which order.

Location: The area where a specific activity will be implemented to address a priority issue. Sometimes, the location of the implementation activity will not be the same location of the priority resource that is being addressed. For instance, reducing sediment concentrations in the main stem of a river may require actions to be taken at the headwaters of minor watersheds.

Technical Advisory Committee (TAC): Members of local, state, and federal entities, non-profit organizations, lake association members, and citizens

Threatened Species: A plant or animal species generally perceived as likely, in the near future, to become endangered.

TMDL (Total Maximum Daily Load): The amount of a particular pollutant that a body of water can handle without violating state water quality standards.

Topography: A detailed description or representation on a map of the natural and artificial features of an area.

Turbidity: The quality of being cloudy, opaque, or thick with suspended matter.

W

Watershed-Wide Priority: A watershed-wide priority initiative is considered to be a priority for all GMZs with a focus on the priority areas within each GMZ.

Watershed: A land area that channels rainfall and snowmelt to creeks, streams, and rivers, and eventually to outflow points such as reservoirs, bays, and the ocean.

Water Storage: Studies and research have found the need for water storage on the landscape to achieve water quality standards for nutrients and sediment especially in watersheds dominated with agricultural landscapes. Water storage is also a means for managing water quantity concerns due to increases in precipitation and agricultural drainage.

WRAPS (Watershed Restoration and Protection Strategy): A watershed approach to restoring and protecting Minnesota's rivers, lakes, and wetlands implemented by the Minnesota Pollution Control Agency on a 10-year cycle *(pca.state.mn.us/water/watershed-approach-restoring-and-protecting-water-quality)*.

CLEAN WATER LAND & LEGACY AMENDMENT